



inpaws journal

Indiana Native Plant and Wildflower Society

Spring 2013

The Whorled Pogonia Orchid

By Michael Homoya

Plant Profile

Brown County is one of the most popular tourist areas in Indiana, if not the Midwest. People come from miles around to see the rugged beauty of Brown County State Park, to stroll among the art and craft shops in Nashville, and to browse antiques offered for sale in establishments scat-

ter throughout the county. They come to ski, to listen to live country and bluegrass music and to hunt and fish. But probably most of all, they come to simply take in the clean air and pastoral scenes that so characterize Brown County's landscape. Yes, there is much to see and do in Brown County.

But there is even more. Quietly tucked away in the woods amidst all of the activity is an item that easily 99 percent of the visitors to Brown County don't see, or likely even know about. It's a plant named the whorled pogonia, or *Isotria verticillata* to botanists. It's not just any plant. It's an orchid—the kind of plant most people associate with tropical jungles rather than the hills of the Hoosier state.

The large whorled pogonia is perhaps the most exotic-looking of the 42 species of wild orchids in Indiana. Its mysterious and foreign qualities are most evident in the flower, which, with its long, spreading sepals, looks more like the threatening pose of some weirdly-shaped spider than an orchid blossom. It definitely is an orchid though, for all of its flower parts are arranged in a manner unique to the orchid family.

For a plant to be an orchid, it must have, among other things, flowers that have three sepals, three petals and a special reproductive structure called a column. The most distinguishing feature of the orchid flower is its lip. The lip is normally the lowermost petal, and is generally larger and shaped differently from the others. It is commonly a different color as well. These features are all present on the whorled pogonia flower, which appears in

Inside

Creature Features	2, 13
Directory	8
Garden Greats	3, 4
Botany	5
Hikes	6, 7, 15
Host Plants	16

One of Indiana's 42 native orchids, the large whorled pogonia is rare in the state, known to grow in only 10 counties. Yet one can reasonably expect to find a population in a day's careful survey of suitable habitat. But don't be fooled by its native look-alike.

ter throughout the county. They come to ski, to listen to live country and bluegrass music and to hunt and fish. But probably most of all, they come to simply take in the clean air and pastoral scenes that so characterize Brown County's landscape. Yes, there is much to see and do in Brown County.

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The large whorled pogonia is perhaps the most exotic-looking of the 42 species of wild orchids in

early May (in southern Indiana) to early June (in northern Indiana).

When not in flower or fruit, plants of the whorled pogonia bear a remarkable resemblance to the sterile plants of the common Indian cucumber root (*Medeola virginiana*). Even experienced botanists generally need a second look to confirm an identification. Both the cucumber root and the whorled pogonia have a whorl of leaves of similar shape and size at the top of a solitary stem, both form colonies comprised of many clonal individuals, and, to add to the confusion, both invariably occur side by side in mixed populations!

Upon close examination, one can see that the orchid's leaves are generally broadest toward

Orchid — continued on page 14



Lee Caschere

Twittering Timberdoodles

Creature Feature

By Janet Martin

A few years ago, driving down a country road just before dark, I noticed a brown lump about the size of a football in the middle of the road. Thinking it might be a rock or a large dirt clod, I slowed down. Soon I realized that what lay in the road in front of me was definitely not a rock. It was an American woodcock that quickly flew to the side of the road and settled down into the vegetation. Its coloration—tan, brown, and gray hues—allowed it to

When he reaches the ground, he starts the process all over again. On bright moonlit nights, the show may continue well into the dawn.

The female waits nearby, watching these aerial dances. If impressed, she will later mate with the accomplished performer. Her nest, on the ground in a nearby wooded area, consists of a scrape lined with dead leaves. She usually lays four pinkish eggs that are speckled with brown. Soon, the adorable downy chicks emerge and leave the nest a few hours after hatching. The female tends the young until they are completely independent at around five weeks of age.

When foraging for food, a woodcock uses a rocking motion as it struts across the ground. These movements are thought to generate vibrations that will cause earthworms to move and, therefore, be more easily discovered. The woodcock inserts

“Like a masterpiece from the mind of Picasso, its ears are located in front of its eyes, at the base of its bill.”

its long, slender bill and probes about in the soft ground to find juicy earthworms and other invertebrate goodies. The tip of the bill is sensitive and flexible, allowing the woodcock to probe deep into the soil and open its bill underground to snatch nearby prey.

The woodcock has a unique adaptation among birds. Like a masterpiece from the mind of Picasso, its ears are located in front of its eyes, at the base of its bill. This feature is believed to assist the bird in hearing earthworms move underground. Its large black eyes are set far back on its head, allowing it to see well in the dark and watch for predators from all angles. Since woodcocks feed at night in open fields with sparse cover, keen eyesight is essential for their survival.

American woodcocks perform their display flights in late February through early April. The best place to observe these spectacles is a damp open field, near a wooded area. Check these areas at dusk or right before dawn and, hopefully, you too will witness their amazing aerial display!

Janet Martin also wrote “Spring Quartet” on page 13.



The American woodcock (Scolopax minor), shown here in a 1916 watercolor by Archibald Thorburn, has amazing behavioral and physical adaptations, including a bill that is sensitive, flexible, and can be opened underground.

practically disappear among the dried leaves and twigs. I rolled down my window and watched the curious creature for a few minutes before it scurried away into deeper cover.

Woodcocks, otherwise known as “timberdoodles,” have amazing behavioral and physical adaptations. Their unusual spring courtship displays begin at dusk with the male waddling around on the ground in an open field while belting out a loud, buzzy Peeennnt! The bird suddenly springs into the air and flies in wide ascending circles, becoming a mere speck in the sky, sometimes reaching heights of 300 feet. The outer three primary feathers of the timberdoodle’s wing are narrow and vibrate, making a bizarre twittering, whirring sound near the top of this display flight. Next, the bird spirals toward the ground, performing tight acrobatic loops while uttering soft chirps.

Easy, elegant, attractive to butterflies

Culver's Root

By Sue Nord Peifer

One of my favorite Indiana native plants for the garden is *Veronicastrum virginicum*, culver's root. Surprisingly, this plant is not commonly used in our gardens, though it is widely distributed in nature across eastern North America and Indiana. A plant with such ease of care and elegant stature deserves to be a regular part of our perennial plant palette and not just relegated to the natives section of the garden center. This prairie spe-

depending on seed source. The form is upright and tidy. White blooms, often with a pale pink blush, appear virtually all summer, beginning in June. The first blooms formed at the stem tips are clusters of upright spires like elegant candelabrum. Using the stems in long lasting bouquets and trimming the spent flowers allows the lateral buds to break so that more flowers are produced throughout the season.

The bounty of blooms makes Culver's root a valuable pollinator plant. Various bees, butterflies, and hummingbirds will visit the spires. An interesting side-effect of moving some natives to a garden is that they actually look better and bloom more prolifically in a garden setting when compared to those in the wild. Culver's root is an excellent example of that. Given elbow room, regular watering and deadheading in the home garden, this plant will be shorter, bushier and produce many more blooms. *Veronicastrum* may be propagated by seed and infrequently self-seeds in the garden. However, this plant is so easy to dig and divide in spring that waiting for seedlings seems unnecessary.

Sue Nord Peiffer, a founding member of INPAWS, enthusiastically plants natives in her own garden when not working at the Madeline F. Elder Greenhouse at the Indianapolis Museum of Art.

Garden
Greats



Sue Nord Peiffer

In the garden Culver's root (Veronicastrum virginicum) looks better and blooms more prolifically than in the wild.

cies is at home in the sunny or part shade perennial bed or cutting garden. Not fussy about soil, culver's root requires only good drainage in average garden soil. Once established, this species is low maintenance and drought tolerant.

Culver's root slowly forms clumps and generally reaches a height of 3 to 5 feet,

Correction

We strive to make only small mistakes, but in the last issue we made a big one. We attributed the article called "Woodland Surprise" about sharp-lobed hepatica to Patricia Cornwell. It was in fact Gene Bush who wrote the article. It was entirely our error. Our apologies to Gene and Patricia.

Favorites for the Designed Garden

Garden Greats

By Wendy Ford

As a garden designer, I select native plants to fulfill specific purposes such as screening, filling spaces, or adding color, plus they need to be neat and tidy, well-behaved, and contribute at least three seasons of interest. Here are some favorites that often make the cut.



Julie Weisenborn, U. of MN ©



©2009 Will Cook

Witch hazel

This small understory tree lights up the dormant woodland with tiny fragrant yellow or orange blossoms in fall or spring. In the home landscape its ridged oval leaves (think green Ruffles® potato chips) provide screening against ugly sights in the neighboring yard through the summer followed by red or yellow fall color and vase-shaped branches reaching heavenward through the winter. There are two choices: fall-blooming *Hamamelis virginiana* (common witch hazel), native to Indiana; and March-blooming *H. vernalis* (Ozark witch hazel), native to the south central U.S. The popular 'Arnold's Promise' promoted in catalogs is a cultivar of an Asian species.

Prairie dropseed (top) and witch hazel are among the well behaved plants favored by designer Wendy Ford of Landscape Fancies. Other favorites are pictured on page 14.

Prairie dropseed

I like to use *Sporobolus heterolepis* (love how this rolls off the tongue!) in large swaths or even in a bed of 15 or so all to itself, planted on two-foot centers to show off the structure of individual plants. The fine leaves of this prairie grass form tidy two-foot mounds of light green in summer. In early fall they send up stalks of tiny seeds that smell like buttered popcorn. Later the leaves turn shades of gold and red, then fade to a wheat color in winter. I shear them down to two inches with a hedge clipper in March and use early tulips (Turkish!) to hold the space until spring sunshine stimulates new growth.

Hairy alum root

Our native coral bell, *Heuchera villosa*, has given rise to a number of hybrid selections that enable me to design with color—leaf color, that is. The closest in appearance to the native is *H. villosa* 'Autumn Bride', a workhorse of a perennial whose mounds of tidy light-green velvety leaves send up stalks of tiny white flowers in, you guessed it, autumn. But if you want showy color all season, choose the chartreuse 'Citronelle', the burnt orange 'Caramel', the chocolatey 'Brownies', or the brownish purple 'Mocha'. All keep their leaves through the winter instead of melting into the ground like many perennials. I try to place them so they are sheltered from the beating afternoon sun.

Eastern bluestar

It's odd that such dainty powder-blue May-blooming flowers carry a jawbreaker name like *Amsonia tabernaemontana*. But the three-foot clumps of leafy stalks are what carry the day, providing the ultimate filler when you need a mass of light green to span the gap between showy flowers and background shrubs, or to fill unused bed space that you'd prefer not to let go to weeds. The nice thing is, this plant turns a pleasant buff color in the fall and holds the space attractively until winter's end, when you cut the stalks to the ground. A dazzling relative, Arkansas bluestar, *A. hubrichtii*, native to the south central U.S., has threadlike leaves that turn a brilliant gold in the fall and make a dramatic edging for a large shrub border.

Favorites – continued on next page

A Case of the Blues

By Patricia Happel Cornwell

The more I study native plants and wildflowers, the more I am reminded that “wild” and “native” are not at all the same thing.

Last May I found 30 delicate plants with small blue flowers bordering my woods here in southern Harrison County. The plants were 18 to 24 inches tall, with thin stems, linear leaves, and had ¾-inch blossoms with five blue petals veined in deeper blue.

Where flowers had gone to seed, the stems bore small round globes, striped green and white. The flowers opened each morning and dropped their petals, one by one, in the afternoon. We were in the midst of a drought, and by mid-June the plants were brown, the capsules full of flat black seeds.

Three of my books had photos that matched the ones I took. I had wild blue flax! There was just one problem. The books gave different species names to identical flowers, but none showed the

plant itself. I still didn't know which blue flax I had. (There are also five yellow-flowered species of flax in Indiana.)

The only good picture I found of a blue flax plant was on an Illinois website which identified it as native blue flax, *Linum lewisii*. The flower matched, but the plant did not. There were inaccuracies in the narrative, so I discounted this ID and kept looking.

Common blue flax, *Linum usitatissimum*, is a cultivated annual from Europe, the plant from which linen and linseed oil are made. *The Audubon Field Guide to North American Wildflowers (Eastern Region)* describes *L. usitatissimum* as “an annual with solitary stems and few flowers,” which at least superficially sounded like my slender plants. From June to October, *L. usitatissimum* blooms on roadsides in “scattered counties” in the northern half of Indiana, according to Kay Yatskevych's *Field Guide to Indiana Wildflowers*.

Linum perenne is another European import, a perennial common only in the western U.S. and often confused with *L. lewisii*, the only true native American blue flax. The Audubon guide describes *L. perenne* as “a tufted plant with leafy stems that bear loose, much branched clusters of blue flowers.”

In my book with the snappy title *Wildflowers, Grasses & Other Plants of the Northern Plains and Black Hills*, I found a penciled note under a photo of *L. perenne*: “Niccolet Interpretive Center SD 8-11-03.” I had seen blue flax before! I had completely forgotten that sighting years ago while traveling in South Dakota to visit my daughter and her family. No doubt I took photos, but I have no memory of the plant.

Wild perennial flax (*Linum lewisii*), the true native, was one of four native plant species first collected by Meriwether Lewis during the Lewis and Clark expedition of 1804-06. A plant of western plains and prairies, it blooms from May to July. It has

Blues – continued on page 11

Botany



Wild perennial flax (*Linum lewisii*), was one of the native plant species first collected by Meriwether Lewis during the Lewis and Clark expedition of 1804-06. A plant of western plains and prairies, it is not native to Indiana.

Favorites – from page 4

Marginal wood fern

What's not to like about leafy fronds that stick around through the dead of winter, shoring up the garden's structure when deciduous leaves have dropped and perennials have disappeared? The two-foot vase-shaped fronds of *Dryopteris marginalis* emerge light green in spring and turn a darker grayish-green by summer. I have not personally grown this plant but, having admired the staying power of its bronze-tinted Asian cousin, the autumn fern, *D. erythrosora*, I sought out a native version, and I think it's going to be my new best friend. Its native habitat is shaded rocky crevices, but give wood fern a rich, humusy soil in a cool shade garden, and it should willingly hold the space after your hostas go poof.

Note: If your local nursery doesn't carry one of these, please ask for it, because there are wholesale sources within the state.

Wendy Ford has happily transitioned from a career in publishing to a small garden design business, *Landscape Fancies*. She delights in creating concept plans that help people visualize their dream landscapes and work in stages to achieve their goals.

Walkers of all ages are invited

Come Hike With INPAWS

Saturday, April 13, 2013

Shrader-Weaver Nature Preserve, Fayette County, Indiana. 10:00–12:30

Leader: Brent Smith, Professor of Biology, Earlham College

What to See: Shrader-Weaver is quite a spectacular place. The total acreage is about 100 acres, containing an old-growth upland stand, a younger forest, and a mature swamp forest. There are a LOT of big trees in the upland and lowland stands, with one of the largest populations of old-growth black walnuts to be found anywhere. The spring ephemerals are really



Indiana's spring ephemerals are an annual delight.

Pictured here (clockwise) are Jack-in-the-pulpit, spring beauty, and squirrel corn.



spectacular here and, with a little luck, will be near or at peak bloom! An easy two-mile trail on flat to gently rolling topography.

Questions? Contact Brent Smith by email (brents@earlham.edu) or phone 765-983-1457. No RSVP required. We will hike rain or shine.

Saturday, April 13, 2013

Sponsored by the Southwest Chapter of INPAWS. 11:00–3:00

Ouabache/Wabash Trails Park in Knox County, near Vincennes (knoxcountyparks.com)

Leaders: SWINPAWS members Michael Broz, Terri Talarek King, and Linda Wilcox

What to See: Wildflowers and the native plants of woodland and wetland, along streams, and near the Wabash River floodplain in this 254-acre county park. Park trails range from easy to moderate. Morning walk with Michael Broz

Trail 1 will start from Hedstrom Shelterhouse near park office. At 12:30 SWINPAWS will meet and lunch at Hedstrom Shelterhouse (bring your own food and drinks). The 1:30 walk with Terri Talarek King on Trail 7 will start from the Sacajawea Shelterhouse in lower park area.

Questions? Contact Terri Talarek King at naturefrog57@gmail.com or 812-881-8987.

For directions and more information about hikes, please visit inpaws.org.

Sunday, May 5

Bendix Woods Nature Preserve, St. Joseph County, Indiana. This is a joint field trip between INPAWS (state) and INPAWS North Chapter. 2:00–4:00

Leaders: Scott Namestnik, Senior Project Scientist and Botanist with Cardno JFNew, and Deb Marr, Associate Professor of Ecology, Indiana University–South Bend.

What to See: The spring wildflower display at Bendix Woods Nature Preserve has been described as one of the finest native floral displays in the state. Our hike will traverse old-growth beech-maple forest, within which we should see ephemeral gems including wild ginger, purple spring cress, blue cohosh, squirrel corn, Dutchman's breeches, yellow trout lily, false mermaid, wild geranium, blue phlox, large-flowered trillium, red trillium, Canada violet, and the locally rare crinkleroot, in addition to several ferns and a diversity of mesic upland forest sedges. Pace will be slow with frequent stops to discuss the plants and allow time for photographs. Some small hills on well-established trail.

Questions? Contact Scott Namestnik at scott.namestnik@cardno.com or 574-229-8748. An RSVP to John Smith at johnjs@goshen.edu or 574-533-9496 is requested by May 2. We will hike rain or shine.

Saturday, June 8

Pokagon State Park & Trine State Recreation Area, Steuben County, Indiana.
1:15–3:30

Leader: Fred Wooley, Pokagon State Park Interpreter

What to See: First the kettle-hole lake environment and surrounding fen and marsh of Lake Lonidaw and wetlands of the Pokagon



Lynne Tweedle

*The celandine poppy (*Stylophorum diphyllum*) is a spring ephemeral that produces yellow sap once used by Native Americans as a dye. The term “diphyllum” connotes that only plants with two leaves produce flowers.*

State Park Potawatomi Nature Preserve. Then we'll carpool two miles to Trine State Recreation Area to visit another kettle-hole lake and a fen under restoration. We may stop to check on progress of the WHIP grant project to restore an overgrown fen and surrounding openings. Gently rolling to flat terrain and some fen-side walking possible. Depending on conditions and group size, we may enter a fen for a closer look at certain plants, so wear footwear you don't mind getting a little mucky. Total walking is less than a mile.

Questions? Contact Fred Wooley by email (fwooley@dnr.IN.gov) or phone 260-833-3506. No RSVP required. We will hike rain or shine; thunder and lightning, no.

Old Growth Forest Hikes

Act Fast!
Space is limited

You are invited to explore old growth forests featuring spring wildflowers on hikes led by staff of Indiana DNR Division of Nature Preserves on two dates. Act fast! Registration for both dates ends April 6 and numbers are limited.

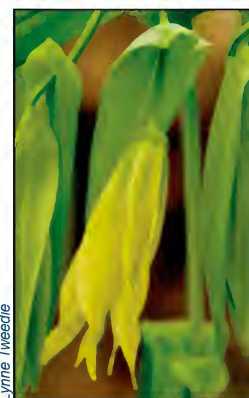
On **Saturday, April 20**, seven hikes will be offered in Jennings, Lawrence, Marion and Parke Counties. All will begin at 10:00 local time. Ecologists and experts from the Division of Nature Preserves will guide hikes at Calli Nature Preserve, Donaldson's Woods, Eagle's Crest, Falls Canyon, and Rocky Hollow–Falls Canyon.

On **May 11** at 10:00 local time, seven hikes will begin at preserves in Fayette, LaGrange, Marion, and Porter Counties at Dunes Nature Preserve, Olin Lake, Shrader-Weaver National Natural Landmark, and Warbler Woods.

Expert Leaders include members and friends of INPAWS Tom Post, Derek Nimetz, Rich Dunbar, Roger Hedge, Ken Brunswick, Jason Larson, Tom Swinford, and DNP Director John Bacone.

Registration and details are available at www.naturepreserves.dnr.in.gov.

Hikes



Lynne Tweedle

*Roots and young shoots of the ephemeral bellwort (*Uvularia grandiflora*) can be eaten. Traditionally, the plant was used to treat sore muscles, backaches, toothaches, and swelling.*

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INPAWS'
great blog at
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Submissions

All are invited to submit photos, articles, news, and event postings. Acceptance for publication is at the discretion of the editor. INPAWS welcomes differing points of view.

Please submit text and high resolution photos (300 ppi) via e-mail to journal@inpaws.org or via land mail to INPAWS JOURNAL, 5304 Carrollton Avenue, Indianapolis IN 46220. Submission deadlines for specific issues are:

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Mission

To promote the appreciation, preservation, conservation, utilization and scientific study of the flora native to Indiana and to educate the public about the value, beauty, diversity, and environmental importance of indigenous vegetation.

Membership

INPAWS is a not-for-profit 501(c)(3) organization open to the public at inpaws.org.

Share

Please direct information of interest to webmaster@inpaws.org.

Gardens Wanted

Annual Garden Tour

Sunday, September 22, 2013

Want to see how native plants contribute to a garden in early fall? This year, the Central Chapter of INPAWS is planning a native plant garden tour for September. The tour, with the theme "Appreciating and Learning from Native Environments," will offer opportunities to view and learn about using native plants in spaces that vary widely in size and setting. Knowledgeable gardeners will be at tour sites to answer questions and discuss garden design, dividing

The committee is currently seeking inspiring residential sites in central Indiana to include on the tour; small properties to large estates are all welcome, as are a variety of garden types, e.g., prairie, rock garden, swale, woodland, etc. If you would like to share your garden with others and have 50% or more native species (trees, shrubs, grasses, vines and/or flowers), please submit your property (or recommend a friend's property) for consideration. Provide a brief description of your gardens, your name, address, and other contact information to Ann Foster at gardentour@inpaws.org.



Katherine Newkirk

Betsy Wilson (in red) guided visitors through her bird and butterfly gardening during INPAWS 2012 tour.

perennials, and transplanting in fall for spring enjoyment. Tour organizers will take photographs of the gardens in late April, July, and early September so visitors can see how each site changed with the seasons. At some of the gardens we'll demonstrate outreach activities for children and enjoy the participation of local master gardeners.

The tour will feature three highly designed gardens at public sites including a school, a park, and a museum with a rain garden.

Stay up-to-date with INPAWS' great blog at inpaws.org

PRESIDENT'S MESSAGE

Art Hopkins

INPAWS leaders recently held an all-day strategic planning retreat, our first ever. We worked hard all day, on a perfectly good Saturday. We brainstormed, imagined, debated, prioritized, and revised. I'm happy to report that we also ate pretty well (pizza, fresh fruit, salad), shared a few jokes, and emerged at the end of the day still friends, and feeling good about what we had accomplished. I continue to be impressed with the caliber of people who serve INPAWS so energetically—and I urge more members to get involved in our committees, chapters, and other work.

So exactly what did we accomplish? Let me beg off for now. Details to follow. I'll leave you with these words from John Keats, so appropriate as winter slides into spring:

*Shed no tear! O shed no tear!
The flower will bloom another year.
Weep no more! O weep no more!
Young buds sleep in the root's white core.*

Conservation Taskforce Report

On Indiana's Natural Resources

By David and Jane Savage

INPAWS is a member of the Indiana Conservation Alliance (INCA), a statewide network of about 30 non-profit environmental, wildlife, outdoors, and land preservation organizations. It provides a unified voice for the protection, stewardship, and sustainable use of our state's natural resources. INCA aims to foster and promote a greater environmental ethic in Indiana and advocates for conservation issues with the general public, state legislators, and the media.



Herbert Davis Forestry

This aerial photo illustrates the fragmentation of forests in Indiana.

An important INCA priority in 2011-2012 was supporting the formation of the Indiana Sustainable Natural Resources Task Force to review and report on Indiana's management of natural resources. The governor and Indiana's legislators decided it was important to ask again whether the state's natural resource policies were adequate to the task of preserving and maintaining our natural capital. This question seemed quite timely since issues such as climate change, rate of biodiversity loss, and nitrogen- and phosphorus-induced pollution of waterways are receiving world-wide attention in the scientific literature. (Nature, Vol. 461, p. 472, 2009)

The Task Force, chaired by W. William Weeks of the Indiana University School of Law, included two members of the Indiana Senate, two members of

the Indiana House, and six members representing various conservation and landowners' organizations. The Task Force received reports from the Indiana Department of Agriculture, the Indiana Department of Environmental Management, and the Indiana Department of Natural Resources. Reports were then solicited and received from experts in the state on specific natural resource issues such as biodiversity, wildlife, forests, soil, water quality and quantity, air and atmosphere, outdoor recreation, and public lands.

The following is a summary of the status of each resource and key recommendations reached by the Task Force. The report contains recommendations in each area for funding and sources of funding.

Water

Status: A high percentage of the segments of our rivers and streams are classified as impaired. Water supply issues are possible in the future in central and southeast Indiana because of population growth and the occurrence of heavier rains and longer periods of drought. Indiana is a significant contributor of nitrogen and phosphorus to the Mississippi River system, causing pollution. The state has not fully committed to adequate planning for water supply and resilience.

Key recommendations: Authority for certain water-related functions should be consolidated into one entity. This new water management entity would be responsible for flood control permitting and policy, setting standards for and overseeing drainage, and planning for water availability, storage, and distribution systems.

Soil

Status: Indiana's soil is a world-quality resource. The state is a leader in developing soil conservation programs, but our state has not invested enough in the technical assistance needed to effectively apply these programs on the land. Large amounts of topsoil continue to be lost because of erosion.

Key recommendations: Provide technical assistance in order to achieve erosion control for 30% of Indiana's farmland employing Conservation Cropping Systems Initiative (CCSI) and its evolving principles by 2030. Covering soil at all times will hold soil in place and improve soil quality.

Forest

Status: State forests are managed to high, third-party sustainability standards, but holdings are fragmented, making management more difficult and expensive. Private forestlands, which constitute 84% of forests in Indiana, are not, on the whole, managed to similar standards. Indiana forested land is under stress because of fragmentation, deer over-population, invasive species, and conversion to other uses.

Key recommendations: Indiana should commit to maintaining its current 4 million acres of forest cover. Investment should be made for consolidating ownership within current state forest boundaries and acquiring contiguous forest lands, as well as to acquire riparian forest along major Indiana waterways. The Classified Forest program should be strengthened.

Biodiversity and Wildlife

Status: Indiana has made noteworthy efforts in establishing sizeable wildlife management areas such as Goose Pond Fish and Wildlife Area. Overall, habitat continues to be fragmented and threatened significantly by invasive species.

Key recommendations: The Bicentennial Nature Trust, established in 2012 by executive order, is a great start for land protection. This should be continued as a commitment for at least eight years. Continued support for land acquisition is essential.

Air and Atmosphere

The Task Force felt it lacked sufficient experience and expertise to develop firm recommendations on this resource.

Indiana's economic success and quality of life for Hoosiers depend on healthy, functioning natural resources. Representative Mike Karickhoff (R – Kokomo) and Senator Richard Young (D – Milltown), both members of the Task Force, have filed HB 1426 and SB 547, respectively (both for water management authority) to encourage continued discussion and policy changes relative to Indiana's water resources. We urge all INPAWS members to read the full Task Force report at www.nature.org/snrft and click on "Read the Report."

Blues – from page 5

been recorded from Manitoba to South Dakota and Wisconsin, west to Utah, and north to Alaska. *L. lewisii* is not native to Indiana.

I sent my flax photos to Kay Yatskevych at Missouri Botanical Garden and Mike Homoya at DNR for clarification.

According to Kay, there is only one record of the introduced perennial *L. perenne* being collected in Indiana, and that was in Porter County in northwestern Indiana in 2002. As to the annual *L. usitatissimum*, she said that outside of certain northern counties, it has only been collected in southern Indiana in 1998 in Floyd County and, prior to that, once in Monroe County. Mine in Harrison County would be only the third record in the southern half of the state. Interestingly, all three counties border the Ohio River.

"None of the blue flax species is considered native to Indiana or even nearby," Mike stated. "*Linum lewisii* is a western species, and apparently most of the prior collections (claimed to be *L. lewisii*) in eastern states are cases of misidentification. They should have been called *L. perenne*. Like *L. usitatissimum*, it is another European species that escapes and naturalizes here."

Kay wrote: "I think you have *L. usitatissimum*. I suggest that you look at the sepals and the leaf venation on your plants and see if that fits." Unfortunately, the plants were no longer viable and I had not collected any plant parts. Nor did my photos show enough leaf detail to do what Kay suggested. Still, it is most likely that I had been visited by *L. usitatissimum*, a wild, but not native, species. If blue flax returns next May, I will be ready with both camera and flower press.

Patricia Happel Cornwell grew up on a farm in Floyd County, where she first became enamored of wildflowers. She and her husband John live on 19 acres registered as a National Wildlife Federation Certified Wildlife Habitat in Harrison County. She became an Indiana Master Naturalist in 2010.

David and Jane Savage are long-time INPAWS members and co-chairs of INPAWS' Conservation Committee.

Gardens of the Nature Conservancy

By Ellen Jacquart

The Nature Conservancy of Indiana decided to build a new office in 2009, and from the beginning the plan was to surround it with native landscaping, making a vegetation oasis in downtown Indianapolis. The Efroymsen Conservation Center, our office at 620 E. Ohio Street, was

completed in 2010 and is a Platinum LEEDs building with all kinds of energy and water-saving bells and whistles. But to the native plant enthusiasts on staff, the most exciting part of the project was the 14,000 square feet of native landscaping with which to play!

The gardens around the office are known as the Bracken Family Gardens in honor of

Frank Bracken, a former chair of the Indiana Chapter trustees, and his family. The native landscaping in the gardens around the building has been used in some traditional ways—to screen parking lots, soften edges, and add color to the site. But the lot was large enough to also use it to tell the story of our conservation work in Indiana.

Throughout the gardens, plants are organized into groupings that represent our best-loved preserves. For instance, one area along Ohio Street has a grouping of red cedar, pale purple coneflower, woodland sunflower, and little bluestem to represent Teeple Glade Nature Preserve in Harrison County. Protecting and managing the glades of Harrison County has been a priority of ours for over 30 years, and dozens of glades have now been protected through the Conservancy's work.

The entrance to the building from the north parking lot features a black oak sand barrens planting to represent Prairie Border Preserve in Jasper County. In partnership with the Department of Natural Resources—Division of Nature Preserves we've now protected over

2,000 acres of this community type in northwest Indiana and manage these areas with prescribed fire and control of invasive plants.

Another landscape grouping along the north side of the building has black walnut, redbud, wild ginger, and Virginia bluebells, reminiscent of Big Walnut Natural Area in Putnam County. This is another area whose preservation we've shared with Department of Natural Resources—Division of Nature Preserves, protecting a nearly 3,000-acre corridor along Big Walnut Creek.

The bioswale retention area between the

Native plant enthusiasts on staff were most excited about having 14,000 square feet with which to play!

parking area and the building has been planted with many different natives accustomed to living in a periodically wet environment. These plants include blue flag iris and tussock sedge as well as attractive wetland shrubs such as meadow-sweet, winterberry, and red-twigged dogwood. This area is designed to resemble a dune swale at Ivanhoe Nature Preserve in Lake County. This bioswale is both visually appealing and functional. It was built for water collection, principally water running off the parking lot. It allows water to puddle and then slowly filter down through the soils and back into the water table.

A LiveWall system, a 16-foot retaining wall of concrete blocks and plants, uses species such as wintergreen, stonecrop, and columbine to mimic a cliffside plant community such as those found at Carnes Mill Nature Preserve in Crawford County. We found that some parts of the "cliff" were sunnier and drier than expected, and so have added more sun-loving cliff plants like Virginia creeper, false aloe, and prickly pear (yes, prickly pear!).

The initial plantings included about 80 species of trees, shrubs, grasses, ferns, and wildflowers. Since then, we've been gradually adding new



Glenn Nice-Purdue University



Nature Conservancy

*The Eastern prickly pear cactus, *Opuntia humifusa*, is the only cactus native to Indiana. It flowers here in June and July.*

Signage in the Nature Conservancy's new gardens aims to educate Hoosiers about the benefits of native plants.

TNC Gardens – continued on next page

Spring Quartet

By Janet Martin

Before the wildflowers awaken from their winter slumber, tiny amphibians fill the air with a cheerful chorus. The opening act is the soft, quacking calls of the wood frog. This tiny masked frog emerges soon after a spring thaw and can be heard during warm spells, even in the dead of winter.

Next to join the chorus is the spring peeper with its bell-like chimes. This minuscule songster, not much longer than a thumbnail, produces a note so loud one would expect it to come from a much larger creature. Individuals make a high-pitched “peep, peep, peep,” and large groups of spring peepers create a deafening din.

TNC Gardens – continued from page 12

species to different areas of the garden and are up to 113 species. That still leaves another thousand or so native species we can add—the possibilities are endless!

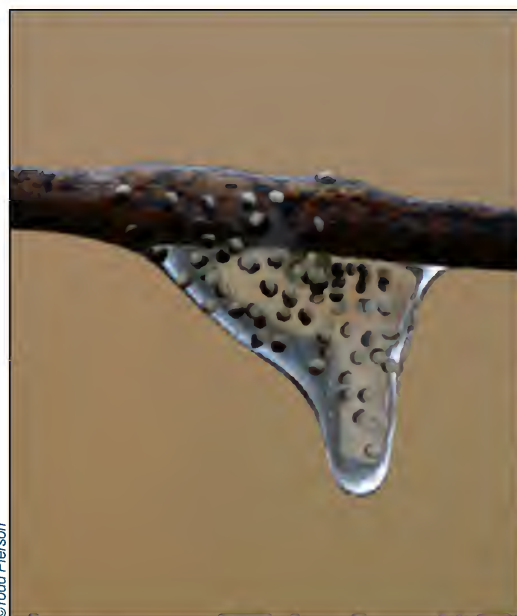
So far, all of the maintenance of the gardens has been by Conservancy staff and Marion County Master Gardeners. The drought this summer took a toll on the trees and shrubs, but the herbaceous plants were amazingly resilient, greening back up once the rains finally returned. Particularly drought-tolerant were leadplant, compass plant, prairie dock, side oats grama grass, and, of course, prickly pear.

Thanks to the generosity of INPAWS we were recently able to put in signs around the gardens that explain the value of native landscaping and the importance of conserving these native plants in the wild. You're welcome to visit the gardens anytime to enjoy this oasis of native landscaping in downtown Indianapolis.

Ellen Jacquart is the Director of Northern Indiana Stewardship for The Nature Conservancy, coordinating land management on Conservancy lands and working on invasive species issues. On her own time, she battles multiflora rose and autumn olive on her land in Monroe County and gardens as best she can in the pottery clay-like soil of northwest Monroe County.

Adding to the harmony, the western chorus frog contributes a pleasing trill, reminiscent of one strumming a fingernail across the edge of a comb. Lastly, the gray tree frog adds percussion with its woodpecker-like rhythm and grunts.

Even more amazing than this quartet's melody, is their miraculous adaptation to extreme cold. Scientists have discovered that during



©Todd Pierson

periods of freezing temperatures, these frogs produce glucose that acts like natural anti-freeze. It protects their cells from damage, even though their outer body may freeze solid. During this period, all signs of life—breathing, heartbeat and circulation—stop. When the warm weather returns, they come back to life and the music begins again.

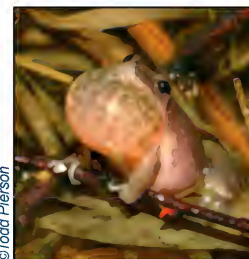
For more information and to hear the calls of Indiana frogs, visit: <http://www.in.gov/dnr/fish-wild/3325.html>

Janet Martin is an Assistant Manager and naturalist with Southeastway Park, part of Indy Parks. She is the principal writer for the Indy Parks Nature Blog and a frequent contributor to the Midwest Native Plants, Gardens and Wildlife Blog. Janet also enjoys doing nature education through public presentations and workshops.

Creature Feature



©Todd Pierson



©Todd Pierson



©Caleb Stemmors

Pictured above are eggs of the western chorus frog and three spring peepers clinging, singing, and peeping.

Orchid – from page 1

the tip, whereas in the cucumber root, the leaves are slightly more tapering and pointed. However, given the variation in leaf shape in individuals of both species, leaf shape is not the best diagnostic feature. Instead, the safest way to separate sterile plants of the two is to inspect the stem. The cucumber root has a solid, wiry stem, whereas the whorled pogonia has a thick, hollow stem. One can determine the nature of the stem without cutting simply by lightly squeezing it between thumb and finger. A give in the stem will indicate that it's hollow.

The large whorled pogonia is a rare plant in Indiana, currently known to grow in only 10 counties. Without doubt, the greatest number of occurrences are in Brown and Monroe counties. In these two counties, one can reasonably expect to find a population in a day's careful survey of suitable habitat.

The best habitats to look for these plants are dry-mesic, upland forest sites situated at the break of relatively steep, west-facing hillsides. These sites are part of a transition zone between the dry chestnut and oak-dominated forests of the higher slope and the mesic beech and maple-dominated forests at the bottom of the slope. Typical tree species at these sites include white oak, black oak, chestnut oak, American beech, sour gum and red maple. Growing with the orchids in the understory are low-bush blueberry, black huckleberry, partridgeberry, maple-leaved viburnum, flowering dogwood, Indian cucumber root, sassafras, naked-flower, tick trefoil and a sedge, *Carex picta*. The latter is an especially good indicator of whorled pogonia habitat.

In the northern counties, the whorled pogonia is restricted to bog habitats, where moist hummocks of sphagnum moss provide the primary growing medium. These environments are obviously quite different from those in Brown County, as is best illustrated by a comparison of species associates. Wetland plants dominate the bog habitat, namely tamarack, poison sumac, large cranberry, high-bush blueberry, black chokeberry, bog willow, cinnamon fern, royal fern, marsh fern, bog bean, pitcher plant and red maple.



© Jorriegat



© Stephen Durrenberger

In "Spring Quartet" (page 13), Janet Martin writes that the tiny wood frog (top) leads off with its soft, quacking call. The western gray tree frog chimes in last with grunts in a rhythm resembling that of a woodpecker.

Garden Greats – from page 4



Clockwise from top left are favorites of garden designer Wendy Ford: Autumn Bride coral bell, blossoms of witch hazel, marginal wood fern, and Eastern bluestar.

Whether in a bog or rugged forest, the whorled pogonia orchid is always a treat to observe, and well worth the effort to find it. If you happen to be in Brown County this spring, include a search for the orchid in your itinerary. You can't see it from a roadside, however, you're going to have to work at it. But consider the reward of discovery, and the distinction of not being included with the 99 percent who will miss out.

Michael Homoya has been a plant ecologist and botanist for the Indiana Division of Nature Preserves since 1982 and is regarded as one of the finest field botanists of the Midwest. He is the author of *Wildflowers and Ferns of Indiana*, *Forests: A Field Guide*, and *Orchids of Indiana*.

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Hike Reports

Winter Tree & Shrub Hike

On a Saturday afternoon, January 12, 2013, Purdue dendrologist Sally Weeks showed an enthusiastic group the native shrubs she grows at her Fountain County home. She started with purple-flowering raspberry and went on to Missouri viburnum, wild hydrangea, huckleberry, leatherleaf, mapleleaf viburnum, Virginia willow, chokeberry, alternate-leaf dogwood, Kentucky viburnum, sweetfern, bog birch, American fly honeysuckle, prickly ash, bearberry, St. Andrew's cross, strawberry wahoo, and blackhaw.

We saw many of the same shrubs growing outside cultivation as we walked through the wooded steep ravine behind the house. In an



Holly Faust

In January, Sally Weeks (in white) welcomed visitors to the gardens she and husband Harmon, have created with natives in rural Fountain County

outer yard, Sally showed us a dense patch of coralberry and St. John's wort, which nurture a cacophony of birds several months of the year, as well as her wild raisin, sweetspire, and bladdernut.

Be sure to check out Sally's excellent book *Shrubs and Woody Vines of Indiana and the Midwest*. Thank you Sally and Harmon Weeks for sharing your woody treasures with us!!

Reported by INPAWS member Holly Faust, an interpreter for Hamilton County Parks & Recreation, Advanced Master Gardener, and Advanced Master Naturalist.

Spring Ephemeral Hike

The sky was cloudy and threatening to storm as INPAWS members and friends gathered in a parking lot at Ft. Benjamin Harrison State Park April 14, 2012, for a spring ephemeral hike. Our well-prepared guide was Perry Scott, a cellist with the Indianapolis Symphony who appears to know as much about wildflowers as he knows about music.

Spring had come so early I was afraid the first wildflowers might have gone to seed. Not so. In places the forest floor was a lake of blue phlox, punctuated with purple spring larkspur, white and purple violets, gold celandine poppies, yellow large-flowered bellwort, and maroon (sessile) and white (nodding) trilliums.

Without once leaving the trail, we saw phacelia, foamflower, swamp buttercup, star chickweed, spring beauties, wild ginger, wild geranium, Solomon's seal, false Solomon's seal, false rue anemone, Jack-in-the-pulpit, golden ragwort, hepatica, and May apples—all blooming.

Other species in bloom were harbinger-of-spring, smilax, snakeroot, wintercress, cleavers, white baneberry, squirrel corn, green dragon, valerian, waterleaf, twinleaf, and bishop's cap. Cut-leaved toothwort and trout lily were not blooming, but their leaves were unmistakable.

In all, we identified 43 species, 28 of which were blooming. Even the thunderstorm that soaked us to the skin an hour and a half into the hike could not dampen our spirits after such a feast for the eyes.

Reported by Indiana Master Naturalist Patricia Happel Cornwell

Hikes

Save the Date

INPAWS Native Plant Sale and Auction

Saturday May 11

Park Tudor School

More information is at inpaws.org



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Zebra swallowtail caterpillars eat two things—pawpaw leaves and each other!

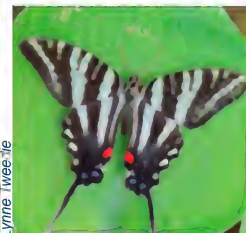
Indiana's Essential Pawpaw



By Nancy Hill

The Zebra swallowtail (*Eurytides marcellus*) is a type of kite swallowtail and is native to Indiana and much of the eastern U.S. It prefers intact habitat, woodlands near some kind of water, and is rarely seen in developed areas.

The zebra swallowtail butterfly starts life as an egg on the underside of a pawpaw leaf, its host plant. The native pawpaw in Indiana (*Asimina triloba*) is an understory forest tree, usually 6 to 15 feet tall, that likes moist soil along creeks, rivers, or ravines. Hoosiers call it the Indiana banana and, in fact, it produces the largest fruit of any tree native to North America. Many like the taste, likening it to banana or mango, but it ripens and begins to ferment as soon as it is picked, making it worthless for commercial sale.



Blossoms of the Indiana pawpaw are pollinated by carrion flies and beetles rather than bees. When flies and flowers do not emerge together it can be a sparse fruiting year. The zebra swallowtail (right) prefers woodlands and undisturbed areas and rarely visits urban areas.

When the swallowtail egg matures, out comes a caterpillar, which begins gorging non-stop on the pawpaw's leaves. Swallowtails

are sometimes cannibalistic, and larvae will eat other larvae on the same plant. It spins a cocoon and becomes a pupa (chrysalis) and rests. The adult butterfly emerges a month after being an egg. It feeds on the nectar of sun-loving flowers found in more open areas. The species is noted for especially long sword-like tails with white tips. The spring version (one of two broods each year) is smaller and has shorter tails than the summer form, but has more white and a brighter contrast.

The zebra swallowtail is unique among butterflies in that in addition to nectar it can also collect pollen, like a bee. The extra protein it gets by doing this gives it an especially long life span (for a butterfly)—an entire six months in which to eat, breed, and die.

Nancy Hill is past president of INPAWS and co-editor of the INPAWS Journal.



inpaws journal

Indiana Native Plant and Wildflower Society

Summer 2013

Plants on the Move

Botany

by **Paul E. Rothrock**

Trout lily flowers open in the morning and close by evening. Bur cucumber tendrils rotate in space and miraculously clasp objects they



© Lynne Tweedie

*In the morning trout lilies (*Erythronium americanum*) open their petals in about 30 minutes. Later in the day they close, growing bigger day by day.*

encounter. The root of a germinating acorn unfailingly bends downward into the soil. Sugar maple saplings angle toward the opening in the forest canopy and position their leaves with a minimum of overlap. All these commonplace examples loudly say that "plants move."

Plants move and bend and grow in specific directions through a series of responses

known as nastisms and tropisms and all of this movement is accomplished without muscles or nerves.

Nastisms are movements whose direction is independent of the direction of the stimulus. These include the opening and closing of flowers and the bending of some tendrils. Tropisms, involving light and gravity, cause plant parts to bend toward or away from a stimulus. Both nastisms and tropisms generally result in different rates of growth on one side of a plant organ compared to the opposite side. Many of these responses received their earliest scientific investigation by Charles Darwin and his son Francis about 130 years ago in *The Power of Movement in Plants*.

I have always found the opening (and closing)

Inside

Book Reviews	3, 16
Directory	8
Events	9
Host Plants	12
Plant Profiles	4, 10
Taxonomy	6

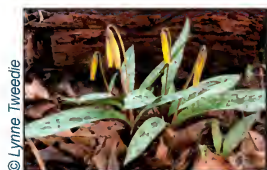
of trout lilies fascinating, a process that takes about 30 minutes. In the morning, the inner surface of the petal rapidly grows in length as the temperature rises, whereas the outer surface does not. Late in the day or with a change in weather, the cooling results in a more rapid growth of the outer surface. Thus, the petals of trout lilies are slightly bigger at the end of each day. Although no one is quite sure why these flowers open and close, one suggestion is that closure reduces the risk of entry and growth of pathogens on rain- or dew-soaked tissue. To see an outstanding time lapse video showing a

On the move – continued on page 2

On the move – from page 1

spring blossom opening and closing, go to <http://www.youtube.com/watch?v=m5lZ2FpXvb4>.

The coordinated movements of bur cucumber tendrils are an even greater marvel. It is by tendrils and other clasping organs that vines climb upwards while expending a minimum of energy making wood. The action of tendrils begins with their slow sweeping motion. Should the tendril contact a rigid object, within minutes it begins to



© Lynne Tweedie



© Lynne Tweedie



Wikimedia – Joh Sullivan

Fast moving plants from top: closed trout lilies, open trout lilies, and the tendril of a pea.

form a spiral coil that will wrap firmly around the object touched. The relatively sudden change in tendril motion is the result of water exiting mechanically stimulated cells. As a result, one surface of the tendril grows more slowly than the other. In addition to this “contact coiling,” bur cucumber also exhibits “free coiling” along the remainder of its tendril and forms a spring with both right handed and left handed helices. Recent research has demonstrated how this remarkable spring structure gives rise to additional coils as the tendril dries, thus drawing the vine closer to its support structure. Check this out on a really cool web video – <http://www.youtube.com/watch?v=Vbzgv5iKEyY>.

The bending of an acorn’s taproot towards gravity, while less dramatic than the movement of tendrils, is a more universal plant adaptation. Root tips are covered by a cluster of protective

cells called the root cap. In gravity-sensitive roots these cells are loaded with heavy starch grains called statoliths. Regardless of the orientation of the cell, its statoliths always fall to the “bottom”. If you were to carefully cut off the tip of the acorn root, it would no longer “know” which is down. While statoliths explain how gravity is perceived, there remains the need to pass that information to cells further up the root where bending can occur. Most recent experiments indicate that a long-familiar plant hormone called auxin is responsible for carrying this message. To see gravitropism in action visit http://www.youtube.com/watch?v=zctM_TWg5lk.

“Plants move and bend and grow in specific directions ... and all of this movement is accomplished without muscles or nerves.”

Auxin also plays an important role in steering plant stems toward light and so, in turn, in positioning maple leaves for maximum light absorption. Most evidence suggests that auxin is either inhibited on the lighter side of a stem or preferentially transported away. This chemical cue allows cells on one side (the shaded side) to elongate more than those on the other. It is fun to visualize how these tiny, moment by moment movements iterated throughout the canopy of leaves can result in the beautiful matrix of green in our forests.

As you hit the trails this summer, look for examples of plants on the move. See how much can be accomplished by the simple principle of one side of a plant organ growing faster than the other.

Dr. Paul Rothrock is Professor of Earth & Environmental Science & Biology at Taylor University in Upland, IN as well as an INPAWS member and popular hike leader.

Bob's Basics: Weeding Without Chemicals

Patricia Happel Cornwell

"Never stop weeding," writes Bob Flowerdew. Do it "again and again until the victory is yours." I was afraid he was going to say that.

In his book *Weeding Without Chemicals*, one of six in his "Bob's Basics" series, the author describes a surprising number of ways to kill or remove weeds without the use of herbicides. The book is a sturdy little hardcover, 6 ¼ x 8 ¼ inches, full of photos and illustrations, with clear headings that make it easy to hop around and find what you want.

This Brit with the strangely appropriate name, long braid, and toothy grin is a familiar character in England. He has written more than a dozen books on organic gardening, appeared on the "telly," and been a regular panelist on BBC Radio's "Gardener's Question Time."

Since we got our place listed by the National Wildlife Federation as a Certified Wildlife Habitat, I have felt a little helpless in the battle against weeds. I just want a little order in my borders around the house. The weeds and snakes can have the other 18 acres.

My favorite Flowerdew suggestion is killing weeds in hard-to-weed places simply by pouring boiling water on them. "Tougher weeds require several applications, but die they do," he promises. I can't wait to try it on the weeds that keep popping up between the flagstones of our walk and patio.

Other suggested weedkillers are salt, soaps and detergents, vegetable oils, corn gluten meal, even steam and flames. Flowerdew doesn't shrink from hoeing, raking, digging and plain old-fashioned pulling, but he gives practical advice on how to maximize success with each of these methods.

The author offers numerous ideas for types

of mulches to suppress weed seed germination and different strategies for getting rid of weeds in vegetable gardens, flower beds, rose beds, shrub borders, lawns, driveways and patios. In

brief appendices, he lists what weeds tell you about your soil, the mineral values of weeds, and which weeds are valuable to which insects.

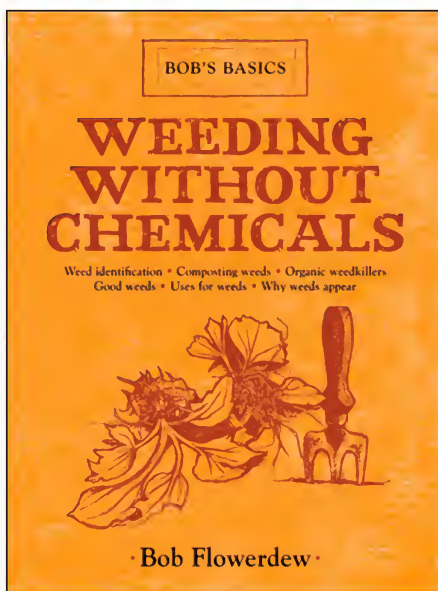
The only reservation I have about the whole book is Flowerdew's recommendations for controlling weeds in woodlands, which I consider too aggressive. The author suggests using shears or string trimmer on unwanted plants and establishing ground cover ("long grass in sunny parts and ivy in shade") to suppress weeds. Granted, I spend many hours every summer out in my own woods, uprooting Japanese honey-

suckle until I can hardly stand up straight. But, for the most part, I prefer to let my woodland set its own agenda.

Weeding Without Chemicals is a beautiful and useful little book. It shines a slender ray of hope on a never-ending chore and cheers us on. Maybe not today, maybe not tomorrow, but someday we may get just one step ahead of the weeds.

Bob's Basics: Weeding Without Chemicals by Bob Flowerdew. Skyhorse Publishing, New York, 2012

Book Review



"I have a room all to myself;
it is nature."

~ Henry David Thoreau

A Wildflower from Outer Space?

Plant Profile

"I found numerous odd plants blooming cock-eyed right out of a pile of gravel. The plants looked like something from outer space." The alien turned out to be clammyweed (*Polanisia dodecandra*), pictured at right.

Reviewed by Patricia Happel Cornwell

You're going to think I made this up.

I was walking a dog in Sioux Falls, South Dakota, when I found a plant called redwhisker clammyweed. We were visiting our daughter and her family. While their dog sniffed every curb for signs of fauna, I scanned for flora. Where the subdivision ended at a disturbed field, I found numerous odd plants blooming cock-eyed right out of a pile of gravel. The plants looked like something from outer space.

The dog wasn't finished sniffing, but I hurried back to do an online search and discovered that this strange species is actually terrestrial. "Redwhisker" describes the feathery purplish stamens that extend well beyond the four loose petals of each small white flower in the racemes. (While reference sources use the term raceme, the impression of these clusters of flowers is that of a compound umbel.)

"Clammyweed" refers to the short sticky hairs that cover the plant. Each leaf has three lanceolate leaflets, $\frac{1}{2}$ to $1\frac{1}{2}$ inches long. From a central stem, arm-like branches extend, each topped with a cluster of whiskered flowers. The weirdest feature of redwhisker clammyweed is its pods. Two to three inches long, they point straight up on either side of the flower cluster, like alien green hands saluting the mother ship.

This plant with the unattractive common name has a pretty Latin name: *Polanisia dodecandra*. A member of the caper family (*Capparaceae*), it is closely related to spiderflower (*Cleome*), but *Cleome*'s pods point out or down and its leaves have five to seven leaflets.

Polanisia dodecandra blooms contentedly from May to October in full sun and barren, gravelly, preferably disturbed soils. It grows to 32 inches, but the specimens I saw were 12 to 16 inches. While it is considered a plant of the plains, the only states in the continental U.S. where redwhisker clammyweed does not grow are the Carolinas, Florida, Louisiana and Maine. So yes, it can be found in Indiana, although it is an introduced species here.



© Patricia Happel Cornwell

One web site calls it "an easy-to-grow annual that makes a nice airy filler plant in gardens." Another source says it "self-sows freely." Nowadays, when drought seems to be an annual occurrence, many of us are looking to add drought-tolerant species to the landscape.

Mike Homoya, botanist and plant ecologist with the Indiana Department of Natural Resources and author of *Wildflowers and Ferns of Indiana Forests*, says, "I consider *Polanisia dodecandra* var. *dodecandra* a native in Indiana in some habitats, such as gravel bars. It is not cultivated as far as I know. I haven't seen any real invasive problems with it in Indiana, but it has been known to escape elsewhere." Homoya says another variety of the species, var. *trachysperma*, is "the showier western



variety that is cultivated and probably not native to Indiana."

Kay Yatskievych, research associate at Missouri Botanical Garden, who lists *Polanisia dodecandra* in her *Field Guide to Wildflowers of Indiana*, notes that she considers it a subspecies, "as does *Flora of North America*."

I found another wildflower that same afternoon in South Dakota. It goes by the name curlycup gumweed. But that's another story.

Patricia Happel Cornwell grew up on a farm in Floyd County, where she first became enamored of wildflowers. She and her husband John live on 19 acres registered as a National Wildlife Federation Certified Wildlife Habitat in rural Harrison County. She became an Indiana Master Naturalist in 2010.

Part II

Perils of the Beach Pea

by Barbara Plampin

You'll recall from Part I in the Winter 2013 issue of the INPAWS Journal, that the state-endangered beach pea (*Lathyrus japonicus glaber*) is down to just one population in Indiana. Circumpolar, our plants do grow at the southern end of their range; they've suffered grievously from human trampling and ATV's and the disturbance of sand movement caused by jetties and seawalls. You'll remember that in his 2007 pilot study, MS candidate John Dollard of Indiana Dunes National Lakeshore (IDNL) strove to prevent extirpation by examining the effects of supplemental watering on 300 greenhouse-grown beach pea seedlings he introduced at six foredune or blowout sites, where the plant had been known historically.

By October of 2007, a dry year, all pilot study plants had died. Dollard concluded it was because of insufficient supplemental watering and sand accretion (burial). But Dollard learned from failure.

Instead of having water table-reaching taproots, beach pea depends for moisture on the fibrous roots of rhizomes up to 32 meters long that grow horizontally at 10 to 20 centimeters below the surface. Supplemental watering is necessary. The problems are how much moisture to provide and how to eliminate sand burial until juvenile transplants mature.

The next year, in his spring 2008 to spring 2009 experimental reintroduction study, Dollard repeated his 2007 layout of both watered and control (unwatered) plots. He planted his greenhouse-grown seedlings at the same two isolated locations (four sites at one, two at the other), but he moved all plantings further back from foredune crests or onto secondary dune ridges to diminish winter sand burial. At a new third location, he added a seventh, somewhat dissimilar site where cottonwood (*Populus deltoides*) provided some shade and where the ground was more open because the associate, marram grass (*Ammophila breviligulata*), was not too thick. Here more surface water was available. This site turned out to be the best. Here he installed 50 plants, raising his 2008 introductions to 350 from 2007's 300. He also increased the supplemental watering of 7.5 liters per plot from twice to thrice weekly. He put sand collars around all 350 plants and

arranged silt fencing to keep away blowing sand. Further, he installed larger seedlings (6 to 12 months old) earlier – in May instead of June.

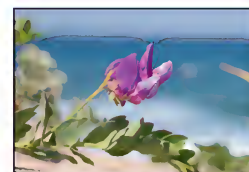
Results: eighteen transplants survived into the spring of 2009. One survivor even sent out a single flowering stem in 2012; however there were no seeds. (Sowing seeds doesn't work anyway because the seed coat is too tough.) In a sense Dollard had failed again. According to the Center for Plant Conservation, fifty plants constitute "a minimum viability population." But in another sense Dollard succeeded because his work does prove the value of supplementary watering when transplants are puny. Mature plants need less supplemental water.

Dollard established other "protocols," among them using several locations to disperse risk, placing locations in remote areas to avoid human disturbance, adding plants to existing reintroductions, growing plants in the greenhouse longer to avoid transplant shock, collecting seeds from more than a single population to create genetic diversity, putting sand collars around first year transplants, and establishing sand barriers for two years. Furthermore, he placed semi-permanent water tanks at sites to eliminate the impractical hand-carrying of water.

No single MS thesis can do it all, but Dollard's work is important. It is stored at IDNL, registered at the International Plant Registry at the Center for Plant Conservation in St. Louis, Missouri, and will appear as an article in the peer-reviewed journal *Ecological Restoration*. His work is responsible for IDNL's planning to establish a panne site (pannes are intra-dunal ponds created when wind blows away sand down to the water table), where near-perpetual surface moisture may yield a successful population.

UPDATE: This spring, I saw 200 very healthy beach pea seedlings in the IDNL greenhouse awaiting transplant.

Barbara Plampin is a Life Director of the Shirley Heinze Land Trust and a field botanist. She does rare plant monitoring, often for the Indiana Department of Natural Resources. She holds a Ph.D. in English and lives in the Indiana Dunes.



*The beach pea (*Lathyrus japonicus glaber*) is in danger of extirpation, but a scientist at the Indiana Dunes National Lakeshore is testing ways to protect and expand its presence.*

Why Do the Scientific

Taxonomy

by Michael Huft

As I take part in field trips and talk to plant enthusiasts, I find that one topic that often puzzles people is the frequent changes in scientific names of plants. Shouldn't *these* names, at least, be unchanging? It is true that one of the principal purposes of scientific names of plants is to provide stability. But there are other reasons for scientific names as well, and these reasons, especially the attempt to encapsulate something about the classification of a plant in its name, sometimes work at cross purposes with the goal of stability.

There are many reasons why names change, but before we can make sense of them, it is useful to describe a few basic principles of botanical nomenclature and classification.

Principle 1. The basic unit of plant classification is the species. A group of closely related species are collected together into a larger group called a genus (plural: genera). The goal is to circumscribe a genus so that all the species in the genus are more closely related to each other than any one of them is to any species in another genus. A genus may consist of two or more subgroups of species, each of which conforms to the goal for a genus, just as the entire group does. Accordingly, botanists may differ among themselves – one treating the entire group as a single genus, another treating them as two or more closely related genera.

Principle 2. The scientific name of a species of plant consists of a genus name followed by a specific epithet. For example, the wild bergamot is known as *Monarda fistulosa*. The first word in this name, *Monarda*, indicates the genus to which this species belongs. The word *fistulosa* is its “specific epithet.” There are other species in the genus *Monarda*, and they each have a different specific epithet, for example, the bee-balm, *Monarda didyma*, or the horsemint, *Monarda punctata*. Because all three species (as well as two other Indiana species and several non-Indiana species) are in the genus *Monarda*, it is clear that they are closely related, a fact that is obscured by the very different common names for these species.

Principle 3. Each species must bear the earliest available specific epithet given to that species. For example, bee-balm was given the name *Monarda fistulosa* in 1753. Later, in 1756, someone gave the name *Monarda mollis* to a plant that was later shown to be the same as *Monarda fistulosa*. Because it was published later, the name *Monarda mollis* cannot be used for this species. A baseline date applies to this principle of priority, which is the publication of Linneaus' book *Species Plantarum* in 1753 – the agreed-upon starting point for scientific names of plants. That book was an attempt to describe and classify all the plant species in the world and to give them consistent names. It was also the first publication that consistently used the two-word form of species names, i.e., genus name plus specific epithet, for all species. Names for any plants published prior to 1753 are not valid.



Hairy puccoon, which resides in northern Indiana and attracts butterflies, has gone through a scientific name change under principle 4 of botanical nomenclature.

Principle 4. Species are recognized by differences in several characteristics, in each of which there is a noticeable gap in the variation. Members of the same species may be quite variable in several characters, but the variation is continuous, for example, a range of flower color from near-white to blue, such that there is no meaningful place to draw a line.

With these principles in mind, we can now examine various ways in which the scientific names of plants can change.

Names of Plants Change?

One type of change results when someone discovers an older name for a given species (Principle 3). For example, the sky-blue aster had long been known as *Aster azureus*, a name that was first published in November 1835. In 1983, a botanist discovered that another name for this species, *Aster oolentangiensis*, had been published slightly earlier, in April 1835. Thus, since 1983, that name has been used for the plant instead of *Aster azureus* (though a number of publications do continue to use the name *Aster azureus*).

Much more common than this type of change, however, are changes that result when it is found that a plant has been classified in two different ways. Suppose a species is first discovered in the eastern United States and given a name. Somewhat later, a botanist who is unaware of the eastern species finds the same species in the Midwest and gives it a name. For a while, books and field guides in the east will use the older name, while similar books in the Midwest will use the newer name. Eventually, someone will realize that the two “species” are actually the same, and that the older name, originally used in the east, will have to be applied to both species.

A similar situation might occur where the second botanist is aware of the first species from the east, but finds a plant in the Midwest that differs from the eastern plant in several characteristics. He therefore names it as a new species in the same genus and gives it a different name. Later, as botanists become more familiar with the plants in the genus growing in areas between the localities where the eastern and the midwestern species were first found, they find that although the differences are real, there is a continuous variation between the eastern and the midwestern populations such that it is not possible to draw any clear dividing line between the two extremes (Principle 4). As a result, the two “species” are combined into a single species under the earlier name, the one originally given to the eastern extreme. People using field guides in the east will not notice any change, but those in the Midwest will see a name change.

An example of this type of change is provided by the plant known in northern Indiana as hairy puccoon (*Lithospermum carolinense*). The name

Lithospermum carolinense was first applied to plants from South Carolina. In 1935, similar midwestern plants were named as a new species, *Lithospermum croceum*, based on relatively small differences in a number of characters. Later studies showed that those differences were not significant and did not form gaps of the type that generally signify differences between species. Thus, the southeastern as well as the midwestern plants are now all treated as a single species, using the older name, *Lithospermum carolinense* (the most recent edition of Swink and Wilhelm's *Plants of the Chicago Region*, however, still uses the name *Lithospermum croceum* for the midwestern populations, as does Charles Deam's *Flora of Indiana*). The differences, however minor, do remain, though, and botanists sometimes treat the midwestern population as a separate variety (a subdivision of a species) from the southeastern populations, *Lithospermum carolinense* var. *croceum*.

Although most name changes result from a change in classification, and a few because of the discovery of older names, there are also special cases. One example is provided by two common species of the spurge genus, *Euphorbia* – creeping spurge, an annual whose branches grow flat on the ground, and nodding spurge, a similar species with arching branches. Under the rules, each name of a species must be tied to a specific specimen of that species, called the type specimen, stored in a herbarium (the rules governing type specimens are complicated, and I won't begin to describe them here).

The name *Euphorbia maculata* was first used by Linnaeus in his book *Species Plantarum*. In Linnaeus' herbarium, which contains the specimens that form the basis for his book, there are two specimens labeled *Euphorbia maculata*. One of them is creeping spurge, and the other is nodding spurge. If the name *Euphorbia maculata* is applied to nodding spurge, then the earliest name available for creeping spurge is *Euphorbia supina*, and you can find that pair of names in many manuals and field guides. On the other hand, if the name *Euphorbia maculata* is applied to creeping spurge, then the earliest name available for nodding spurge is *Euphorbia nutans*, and

Taxonomy – continued on page 15

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Submissions

All are invited to submit photos, articles, news, and event postings. Acceptance for publication is at the discretion of the editor. INPAWS welcomes differing points of view.

Please submit text and high resolution photos (300 ppi) via e-mail to journal@inpaws.org.

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Mission

To promote the appreciation, preservation, conservation, utilization and scientific study of the flora native to Indiana and to educate the public about the value, beauty, diversity, and environmental importance of indigenous vegetation.

Membership

INPAWS is a not-for-profit 501(c)(3) organization open to the public at inpaws.org.

Share

Please direct Information of interest to webmaster@inpaws.org.

Small Grants

We are pleased to announce that each of the following projects has been awarded an INPAWS 2013 grant. The Small Grants program received a total of 19 applications.

Jameson Camp (Indianapolis) Native plants will be further added to the grounds of the camp for educational and habitat value.

Osborne Park Restoration (New Castle) Originally a flat woods habitat, the current herbaceous layer is predominantly fescue and brome, but has many spring wildflowers and sedges. The project proposed will chemically remove the Eurasian grasses, drill an upland woodland seed mix, plant oak seedlings, install interpretive panels and trail.

HOPE (Evansville) A garden for Habitat Observation and Preserving the Environment at Vogel Elementary School. Vogel will create a butterfly garden along with a short grass prairie, shade garden, and sun garden using native Indiana plants. Over 650 students will benefit from the HOPE garden.

Lily Day Nursery (Indianapolis) This project will use native plants to create two exciting planting bed pockets where kids and visitors will interact and discover. Part of multi-purpose outdoor classroom areas connected with natural pathways.

Remington Parks Prairie Grass (Remington) The project will establish prairie species in a low flood prone area.

Mulberry Library Demo Rain Garden (Mulberry) This project will serve as a demonstration area for library patrons, local schools, FFA programs, and persons interested in conservation, water quality, and the importance of native Indiana plant communities. The Demonstration Rain Garden will also be used in programming for Clinton County Soil and Water Conservation District.

Research conducted by Asya Robertshaw: Mutualisms in a Warmer World (West Lafayette) The project will evaluate the community composition of spring wildflowers and their pollinators under ambient and elevated soil temperatures while contributing to the educational resources at a local biological reserve. Changes in environmental conditions may disrupt plant-pollinator interactions if each partner responds differently to changing


Grants – continued on page 15

Equinox Garden Tour September 22, 2013

You may have wondered how native plant gardens and specific native plants look throughout the garden season; this year you can find out! You will be able to view photos and read descriptions of our garden tour sites at three times – late May, late July and early September and then visit them on Sunday afternoon, September 22nd.

Mark your calendar now and check the INPAWS website and blog throughout the summer for more detailed information and photos.

The Equinox tour includes a wide variety of environments in which native plants are used, providing biodiversity as well as beauty and interest. The sites include:

- ~ Three residential sites planned and tended by three active INPAWS gardeners
- ~ A church property facilitated through the efforts of an INPAWS member. (A teaching garden and educational materials were provided through an INPAWS grant.)
- ~ The common area entryway into a neighborhood, exhibiting how native plants are used for both the enjoyment of residents and savings (less mowing and maintenance)
- ~ A city park
- ~ A public school 

INPAWS Hikes

Saturday, July 27. Prairie Creek Barrens Nature Preserve in Daviess County. (details on page 15)

Saturday, August 17. Muscatatuck National Wildlife Refuge in Jackson and Jennings counties

Visit inpaws.org and the INPAWS blog for more information.

Appalachian Filmy Fern

Life in a Twilight Zone

Plant Profile

by Michael Homoya

Tucked away in some of Indiana's most remote and rugged areas there exist a few small populations of a most fascinating and delicate little fern known as the Appalachian filmy fern (*Trichomanes boschianum*). Named for its translucent one-cell-thick leaf blade, this plant has



Indiana hosts seven populations of the filmy fern (*Trichomanes boschianum*), some of which are small enough to fit into the palm of one's hand.

long captured the interest of botanists and fern enthusiasts, although not necessarily for any exotic beauty it possesses. It is the fern's life history that is the focus of attention, and rightly so, as few Indiana plants are as interesting and mysterious as filmy fern.

One of the most amazing things about filmy fern is that it's here at all. This statement is made in light of the fact that the vast majority of the filmy fern family members (Hymenophyllaceae) occur in tropical rain forests. There they occur mainly as epiphytes, growing luxuriantly on other plants such as tree trunks and their branches. Constantly bathed in the rain forest's relatively warm, moist air, the tender filmy fern thrives.

How, then, can a species with relatives such as those described above survive the Hoosier

climate? In some years it barely does. It exhibits considerable dieback during cold extremes, and our populations were almost decimated during the winter of 1977-1978 as well as those of the early 1980s. With this harsh reality in mind, one must ask again, how can a species seemingly better suited for the tropics occur here? The answer can be found by examining the very specific habitat in which filmy fern grows.

Ask yourself this: If you were a plant with tropical tendencies, where in Indiana would you grow knowing your need for protection from bitter winter winds? Not sure? Think of a setting where certain indigenous people in prehistoric southern Indiana lived and you have the answer – sandstone rock shelters.

A sandstone rock shelter, also called a rock house, or an overhang, is a cave-like indentation in a cliff. Those rock shelters that face south and are shielded from north winds are relatively cozy places, as evidenced by the copious signs of Indian occupation. Research has shown that rock shelters modify climate like well-controlled greenhouses, maintaining humidity and temperature at moderate levels while avoiding extremes. Because of this greenhouse effect our fragile little filmy fern can exist in Indiana.

Filmy fern normally grows at the very back edge of a rock shelter, where the ceiling arches down to join the floor. Damp, dimly lit and subdued are good adjectives to describe this particular environment. It is a twilight zone, and filmy fern is perhaps the only vascular plant in Indiana restricted to such an environment. It is a troglodyte, if you will; a cave plant. Being in this environment makes for great fun for the adventurous botanist. Imagine yourself with flashlight in hand doing a belly crawl on a damp, sand/mud floor while peering into grottos for signs of life. It is a bit of a challenge, and, because the fern is so rare, there is seldom reward for the effort.

The primary range of the Appalachian filmy fern is centered in the southeastern U.S., with the greatest number of occurrences in the Cumberland Plateau. Overall, scattered populations can be found from West Virginia to Georgia, west to Arkansas and north to southern

Illinois, Indiana, and Ohio. Indiana is fortunate to have seven populations of filmy fern, all in Crawford, Martin, and Perry counties.

Filmy fern was first discovered in Indiana in Crawford County in 1977, by Mark Swayne and his father Julius. *Outdoor Indiana* readers may

in length and about 1 inch wide. In the southern states they may reach 8 inches in length. Filmy fern leaves are evergreen and bear tiny, hair-like bristles on the tips of some of the teeth. These bristles are alluded to in the species' other common name, Appalachian bristle fern.

There are many other interesting aspects of the filmy fern's life history that could be discussed. Certainly a book could be written on the subject. Although many of the fern's secrets, such as how it got here in the first place, will undoubtedly remain, you can simply take delight in the fact that this botanical treasure is at home in Indiana.



Roger Hedge prepares to measure filmy fern in its cave-like sandstone shelter. Only in such protected areas can this relative of tropical epiphytes survive in Indiana.

Michael Homoya is a plant ecologist and botanist for the Indiana Division of Nature Preserves, a position he has held since 1982. Regarded as one of the finest field botanists of the Midwest, he is author of Wildflowers and Ferns of Indiana Forests: A Field Guide (Indiana University Press, 2012) and Orchids of Indiana (Indiana University Press, 1993).

recall the article in the April 1986 issue that explained the Swaynes' discovery of another rare plant in Indiana, the French's shooting star. A second filmy fern population was discovered in 1984 by members of the DNR's Division of Nature Preserves. That population, located in Martin County, is very close to being the most northerly in the world (a few populations in Ohio occur farther north). Five additional populations have since been discovered, mostly in Crawford County. The species is officially listed as endangered by the Indiana Division of Nature Preserves.

Each of Indiana's filmy fern populations is small, so small in fact that all the leaves of some populations could easily fit in the palm of one's hand. Most of the leaves are 1 – 3 inches

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Editor's Note

In the Spring 2012 issue of this journal, I wrote about zebra swallowtail butterflies and their host plant, the pawpaw tree. Not being a scientist, I relied on the Internet and guide books for information. Butterfly expert Jeff Belth, author of *Butterflies of Indiana: A Field Guide*, wrote in to correct the record on several points. To see his informative comments, please visit inpaws.org.

Nancy Hill

Appendix O. Native Shrubs to Sustain Wildlife

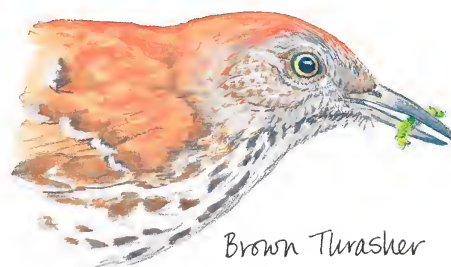
There are many cultivars of shrubs native to the Midwest, but below is a list of some of the “wild-type” species that adapt well to the garden. Where to obtain these plants? There are ever more nurseries devoted to selling natives, and mainstream nurseries that carry at least some native plants. A search on the Web for a particular shrub will reveal sources, and Web sites of native plant societies (such as the Indiana Plant and Wildflower Society at www.inpaws.org, and Wild Ones at www.for-wild.org) list places in the area that sell natives. These societies often host their own plant sales, as do state parks, water and soil conservation districts, and county extension agencies. Membership in native plant organizations will provide the gardener with greater access to natives through plant swaps and plant rescues. Most groups also sponsor tours of native gardens in their community and offer botanical walks that allow the gardener to see plants in their native habitats.

<i>Species</i>	<i>Benefits</i>	<i>Larval species hosted</i>
American hazelnut (<i>Corylus americana</i>)	Nuts and catkins for wildlife	polyphemus moth
Chokeberry (<i>Aronia</i> spp.)	Flowers provide nectar, fruit for wildlife	coral hairstreak butterfly
Blueberry/huckleberry (<i>Vaccinium</i> spp.)	Flowers provide nectar, fruits for wildlife	striped hairstreak, Henry's elfin, and spring azure butterflies, huckleberry sphinx moth
Buttonbush (<i>Cephalanthus occidentalis</i>)	Flowers provide food for insects and hummingbirds, seeds for wildlife	Saddleback caterpillar, hickory horned devil, promethea moth, hydrangea sphinx moth
Dogwood (<i>Cornus</i> spp.)	Flowers provide nectar, fruit for wildlife	spring azure butterfly, polyphemus moth
New Jersey tea (<i>Ceanothus americanus</i>)	Flowers provide food for insects and hummingbirds, seeds for wildlife	Various moths
Serviceberry (<i>Amelanchier arborea</i> or <i>laevis</i>)	Flowers provide early source of nectar, early fruit for breeding birds	striped hairstreak, viceroy, and red-spotted purple butterflies
Spicebush (<i>Lindera benzoin</i>)	Flowers provide early source of nectar, fruits for wildlife	spicebush swallowtail and promethea moth
Sumac (<i>Rhus</i> spp.)	Flowers provide nectar, persistent fruits for wildlife	showy emerald moth, hickory horned devil

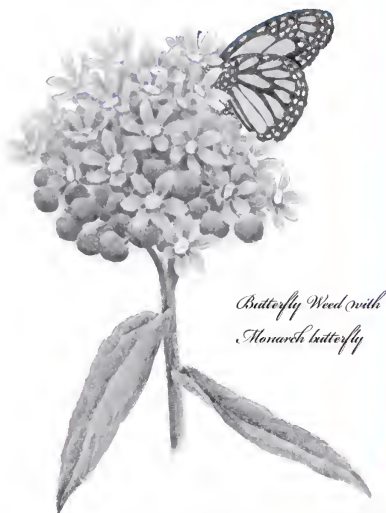
<i>Species</i>	<i>Benefits</i>	<i>Larval species hosted</i>
Sweet pepper bush (<i>Clethra alnifolia</i>)	Flowers provide nectar for insects and hummingbirds, fruit for wildlife	various moths
Viburnum (<i>Viburnum</i> spp.)	Flowers provide nectar, fruit for wildlife	spring azure butterflies, hummingbird clearwing moths
Winterberry (<i>Ilex verticillata</i>)	Nectar for insects, persistent fruit for wildlife	Harris' three-spot moth

OTHER NATIVE SHRUBS TO GROW IN THE MIDWESTERN GARDEN:

American beautyberry (*Callicarpa americana*)
Common ninebark (*Physocarpus opulifolius*)
Common snowberry (*Symphoricarpos albus*)
Coralberry (*Symphoricarpos orbiculatus*)
Juniper (*Juniperus communis*)
Leatherwood (*Dirca pallustris*)
Mock orange (*Philadelphus inodorus*)
Mountain laurel (*Kalmia latifolia*)
Sweet shrub/Carolina allspice (*Calycanthus floridus*)
Virginia sweetspire (*Itea virginica*)
Wahoo (*Euonymous atropurpureus*)
White meadowsweet (*Spiraea alba*)
Witch-alder (*Fothergilla*)
Witch-hazel (*Hamamalis virginiana* or *vernalis*)



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Press from the new book *Shrubs
Large and Small – Natives
and Ornamentals for Midwest
Gardens* by Moya L Andrews &
Gillian Harris with Illustrations by
Gillian Harris © 2013



Got Sun? is illustrated not only with photographs of plants, people, and landscapes, but also with illustrations like the one above by artist Jean Vietor.

Book Review

Got Sun? – from back cover

(*Mimulus ringens*) is “the larval host plant of the Common Buckeye and Checkerspot butterflies and the Chalcedony Midget Moth” and that New Jersey tea (*Ceanothus americanus*) is “larval food host for the Mottled Duskywing and the Spring and Summer Azure butterflies.”

This book lists many more plants than *Go Native!* and most are accompanied by a lovely drawing by Jean Vietor, another long time friend of INPAWS'. There are also dozens of four-color photographs of specific plants and beautiful blooms, as well as landscaping ideas such as a large bed of natives that have a seasonal succession of bloom, native grasses accenting a waterfall, the use of texture and height in a bed, how a small tree provides an accent, and even how to use plastic milk jugs as mini-greenhouses.

Those INPAWS members who know and miss

The Peace of Wild Things

Wendell Berry

When despair for the world grows in me
and I wake in the night at the least sound
in fear of what my life and my children's lives may be,
I go and lie down where the wood drake
rests in his beauty on the water, and the great heron feeds.
I come into the peace of wild things
who do not tax their lives with forethought
of grief. I come into the presence of still water.
And I feel above me the day-blind stars
waiting with their light. For a time
I rest in the grace of the world, and am free.

Copyright © 2012 by Wendell Berry from *New Collected Poems*.
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Carolyn since she moved to Minnesota ten years ago will be pleased to see how much she is enjoying herself: “I love to raise Monarchs from egg to butterfly on my kitchen counter in a big, glass, gallon jar. My grandchildren come faithfully to check on the progress, watching with delight as the tiny winged creature finally emerges, pumping its wings to full size.”

Got Sun? is a unique and information-rich third volume in Carolyn Harstad's continuing effort to preserve our native plants, enrich our biodiversity and give more and more pleasure to the lucky gardeners who have discovered, with her help, these versatile beauties.

Nancy Hill is a past president and long-time member of INPAWS. She gardens in Indianapolis and enjoys the wildflowers of Owen County, Indiana.

Fruits of our Labor: Restoration of Prairie Creek Barrens

Taxonomy – from page 7

you can find that pair of names in many other manuals and field guides.

There is a rich history of publications arguing one way or the other as to the proper name



In Linnaeus' herbarium, the name Euphorbia maculata was applied to two different species of spurge. To this day manuals and field guides differ as to which is which.

of these species. Finally, in 1966, a paper was published that seems to settle the matter, concluding that creeping spurge is properly called *Euphorbia maculata*. However, some manuals published since then continue to use the other set of names (prominent among them the most recent edition of Swink and Wilhelm's *Plants of the Chicago Region*). To make matters worse, these two species belong to a group of species within the large worldwide genus *Euphorbia* that has often been separated out as the genus *Chamaesyce*, and many manuals use one or the other of these two sets of specific epithets coupled with the genus name *Chamaesyce* instead of *Euphorbia* (for example, Kay Yatskievych's *Field Guide to Indiana Wildflowers*). Current studies, however, indicate that keeping those species within *Euphorbia* best reflects the overall classification.

Michael Huft received his Ph.D. in Botany from the University of Michigan in 1979, and subsequently studied the plants of Mexico and Central America at the Missouri Botanical Garden in St. Louis and the Field Museum in Chicago, where he is currently a research associate.

When: Saturday, July 27, 2013, 10:00 am-12:00 noon EDT

Where: Prairie Creek Barrens Nature Preserve, Daviess County, Indiana.

Leaders: Harold Allison, naturalist and columnist; and Michael Homoya, botanist/plant ecologist, Indiana DNR Division of Nature Preserves.

Trail Conditions: Terrain is hilly and no trails present. Briers and brush in places, and ticks and chiggers likely. There will be no shade for most of the hike. No restroom facilities available.

What to See: The preserve hosts one of the last remnants of sand barrens in southwest Indiana. Many uncommon and rare species are present, including sand hickory, Maryland meadow beauty, and tube beard tongue. Ten years ago restoration efforts were undertaken and thousands of plugs were planted by volunteers, including many INPAWS members. Although recovery has been slow, many of the plants are now established and reproducing. Here's an opportunity to see and appreciate restoration in progress.

Directions: Located in Daviess County, the preserve is approximately 5 miles north of Washington, Indiana. Specific directions provided upon registration (see below).

Questions: Contact Mike Homoya at mhomoya@dnr.in.gov or 317-232-0208 to register. Except for thunder and lightning storms, we will hike rain or shine. 🌿

Grants – from page 9
climatic patterns.

Research conducted by Lauren M. Smith:
Which light environments result in the most destructive garlic mustard invasions?

(Bloomington) The project's purpose is to determine how light environment influences garlic mustard allelopathy. These results will tell us where garlic mustard has its greatest negative impact on native species, and therefore which invasions require the greatest control efforts.

Research conducted by Adam Thada: Testing in Avis Prairie (Taylor University) The goal is to increase floral species diversity in a grass-dominated prairie restoration by interseeding new forb species. Two biomass removal pre-treatments (hay-ing and burning) and two grass-specific herbicide treatments will be tested for their effectiveness as disturbance mechanisms to aid the germination and survival of new seeds.

Hike



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Got Sun? 200 Best Native Plants for Your Garden

by Carolyn Harstad

Reviewed by Nancy Hill

"Would I buy this book?"

This is what I asked myself when I was given a review copy of Carolyn Harstad's new book *Got Sun? 200 Best Native Plants for Your Garden*, released April 2013 by Indiana University Press. I have her two previous books on my shelves, both of them dog-eared with multiple pencil underlining. "What can she tell me in this volume that she hasn't already," I thought. The answer is...lots. Would I buy it? Absolutely.

Carolyn was one of INPAWS' founding members in the early 1990's. Her first book, *Go Native! Gardening with Native Plants and Wildflowers in the Lower Midwest*, was published in 1999. Fourteen years later, in this volume, Harstad reflects back: "...in 1999 few gardening books touted native plants as a preferred option for gardeners. Purchasing them was next to impossible... 'It will look like a weed patch,' was the most common observation."

Today, we've been converted. We've listened to Doug Tallamy, we walk through garden centers that have prominent displays of native plants, we've seen hundreds of books and magazine articles that have convinced us that using natives not only brings us the immediate pleasure of watching butterflies and birds, but contributes in very real ways to the health of our entire ecosystem. On top of that, we've used these plants in our own gardens for years now and have real affection for many of them – loving their beauty, hardiness and self-sufficiency.

So today Harstad is preaching to the choir and has the challenge of making her sermon interesting. She succeeds. In *Got Sun?* she focuses on specific trees, shrubs, perennials, ground covers, ferns, vines and grasses with which she has personal and decades-long experience. As in *Go Native*, she lists planting requirements and propagation under each plant, but this go-round, she gives us much more information, including growing zones, height, and bloom time. She tells the reader if a plant is drought tolerant, deer resistant, or suitable for a rain garden. Something I especially enjoyed is that she lists relevant species and describes the attributes of exceptional cultivars.

For example, fourteen years ago in *Go Native!* she provided a one-paragraph description of gayfeather (*Liatris spicata*). In her current *Got Sun?* Carolyn gives this versatile native a full page, starting with *L. spicata* and going on to dense blazing star (*L. punctata*), meadow blazing star (*L. ligulistylis*), rough blazing star (*L. aspera*) and prairie blazing star (*L. pycnostachya*).

She places specific plants within their larger biological systems. She doesn't just say "butterflies love it." She says that monkey flower





inpaws journal

Indiana Native Plant and Wildflower Society

Fall 2013

A tale of leg-pulling

GIANT BLADDERWORT EATS MAN'S LEG!

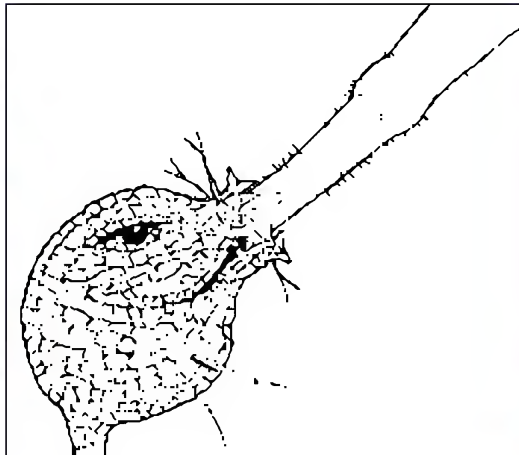
By Michael Homoya

Hovey Lake, Indiana. Two biologists from the Department of Natural Resources have reported an amazing story about a co-worker's near-fatal experience during a recent vegetation survey of Hovey Lake State Fish and Wildlife Area in Posey County.

The plant responsible for the biologist's condition has been identified by a botanist from the Division of Nature Preserves as a tropical species of bladderwort. Bladderworts are normally quite small carnivorous plants that use bladder-shaped traps to capture prey. How this giant species became established in Hovey Lake is unknown, but it is suspected



Indiana's ten bladderwort species produce flowers, but lack true leaves or roots. All have tiny balloon-shaped bladders that capture and consume small animals including mosquito larvae.



According to the biologists who witnessed the event, the three men were in a boat inspecting an unusual aquatic plant in Hovey Lake, when the hand of the biologist collecting the specimen was sucked into a huge slimy, bulbous trap emanating from the plant's underwater stem.

The trap pulled the biologist from the boat, keeping him submerged for approximately two minutes. Working quickly, the other biologists were able to free their co-worker from the plant's grasp, but only after vigorously pulling on his leg. The victim, whose name is being withheld at the family's request, is currently in satisfactory condition in an Evansville hospital, but is still suffering from mental distress and shock.

that migrating waterfowl may have transported the plant's seed from Central America.

That there exists a species of bladderwort large enough to trap a man is truly unreal, especially considering that all other species of bladderworts known to occur in Indiana are very small, often less than five inches in length. These bladderworts, of which ten different kinds have been recorded for Indiana, consist almost entirely of threadlike green stem tissue and are without true leaves or roots. All have balloon-shaped bladders, most of which are no larger than the size of a pin head, attached to their branchlets. The plant's Latin name, *Utricularia*, derives from the term *utriculus*, meaning "little bladder."

The bladder of the bladderwort might be more aptly termed "deathtrap," since it is used

Inside

Awards	13
Book Review	12
Conference	9
INPAWS in Action	10
Hikes	5, 14
Host Plants	7, 16
Plant Profile	3
Terminology	4, 6

Bladderwort — continued on page 2

Bladderwort – from page 1

to capture and consume prey. Even the tiniest of bladders is capable of entrapping small animals, including water flies, mosquito larvae, even tadpoles and small fish. The prey is literally sucked into the bladder through a one-way, hinged trapdoor and is eventually digested into the plant tissue.



© Jaap Cost Budder

The bladders of the bladderwort are extremely small, no larger than the head of a pin, yet capable of entrapping small animals by sucking them through a one-way, hinged trapdoor.

The mechanism by which bladderworts capture organisms is most complex and, even today, not completely understood. Basically, a trap must be set before it is capable of capturing prey. Special glands located inside the bladder set the trap by creating a condition of negative pressure within the bladder cavity. The negative pressure creates a suction that draws objects into the bladder as the trapdoor is opened.

The opening of the tightly closed trapdoor occurs when an unsuspecting organism such as a tadpole brushes against the sensitive trigger hairs near the bladder opening. As that occurs, the door hinge loosens, allowing the organism to be rapidly sucked inward. Once in, the poor victim can never get out, for the trapdoor closes immediately. Because the door is hinged to swing only to the inside, the prey is securely trapped, with no option to avoid its fate of slow death.

In Indiana, bladderworts are mostly found in the northeastern lake region. The plants are usually immersed in shallow pools of lakes, ponds and swamps, but may also occur in bogs, fens and moist sand. Because bladderworts are small and usually out of sight, most people are unaware of their existence until the plant sends forth a flowering stalk above the water's surface. Even then, the attractive snapdragon-like flowers often escape detection.

Most Indiana bladderworts have yellow flowers, but two species have purple ones, purple bladderwort and upside-down bladderwort. The flowers range in size from one-fourth inch tall, as in lesser bladderwort (*Utricularia minor*), to one inch tall, as in greater bladderwort (*Utricularia vulgaris*). One odd species, awl-shaped bladderwort (*Utricularia subulata*), may actually have the tiniest flowers of all Indiana bladderworts, since the flowers generally never open! Fortunately, the flower is self-fertilizing and can still produce viable seed to propagate.

Bladderworts, fact or fiction, are certainly among the most unusual organisms occurring in Indiana. Inspect one closely if you are fortunate enough to encounter one – but beware of those exceptionally large specimens! Don't worry, though, if you do get trapped by one, for there will surely be a DNR biologist nearby to "pull your leg."

Michael Homoya has been a plant ecologist and botanist for the Indiana Division of Nature Preserves since 1982. He is author of Wildflowers and Ferns of Indiana Forests: A Field Guide (Indiana University Press, 2012) and Orchids of Indiana (Indiana University Press, 1993).

Reprinted from Outdoor Indiana magazine with permission of the Indiana DNR. When this article, partly a spoof, appeared in that publication in 1986, staff at Hovey Lake Fish and Wildlife Area received reports of visitors concerned about the dangerous "giant bladderwort." INPAWS trusts that our readers get the joke and understand that they need not fear our common but tiny bladderworts.

Don't Forget the Goldenrods

By Paul E. Rothrock

Autumn is a scary time for the wildflower enthusiast! September and October have fewer and fewer species in flower until only asters and goldenrods seem to remain. Both groups are taxonomically challenging; both have a high diversity of species.

This year let's begin to face the problem head-on and start by learning some goldenrods. In so doing, also make sure you fully enjoy these species in your wildflower gardening.

Goldenrods, members of the family *Asteraceae* (the "composites"), encompass about 30 species in Indiana. Most belong to the genus *Solidago* (from the Latin *solidus*, or whole, a reference to reputed healing properties), but several are now assigned to the genus *Euthamia*.

Our common species favor three distinct habitats. In open fields and meadows expect Canada and tall, gray, and grass-leaved goldenrod. The first two are the most abundant species in Indiana, probably because they spread by rhizomes and use phenolic compounds to slow the growth of nearby competitors.

In wet habitats, stream corridors, fens, and marshes, you may encounter late and rough-leaved (or swamp) goldenrod.

Finally, we have several common and quite beautiful woodland species – bluestem, elm-leaved, and zigzag goldenrod. Find the new three-page picture guide to these species and others on the INPAWS website at inpaws.org/in-the-wild/botanizing-tools.

Of our common goldenrods, Canada and tall goldenrod are too aggressive for home landscapes. In fact, in some parts of the world they have become introduced weeds. On the other hand, zigzag and occasionally bluestem goldenrod show up on retail lists of native plants. They adapt readily to partially shaded flower gardens and, depending upon when adequate soil moisture is available, provide color from sometime in September until well into October.

Retailers also have been quick to feature several prairie and dry woodland species. These include stiff goldenrod (*Solidago rigida*), a prairie species with flat-topped inflorescences and gray-green leaves, and showy goldenrod, which hails

from black oak savannas. The latter can have large feathery plumes of yellow from late July well into autumn.

Potential sources for garden-safe goldenrods may be found on the INPAWS website: inpaws.org/landscaping/sources-of-indiana-native-plants.

Paul Rothrock is professor of biology and environmental science at Taylor University.

**Plant
profile**



© Bruce Morrison

The countless wings that from the infinite
Make such a noiseless tumult over it
Do no doubt with their color compensate
For what the drab weed lacks of the ornate.

*Excerpt from "Pod of the Milkweed" from In the
Clearing by Robert Frost*

Part II:

Why Do the Scientific

Taxonomy

By Michael Huft

In the last issue I discussed reasons for changes in the scientific names of plants that involved only the second word of the scientific name, the specific epithet. We continue with examples of name changes that result from moving a species from one genus to another.

One reason this may happen is that the person who originally named the plant simply put it in the wrong genus.

An Indiana example is the plant long known as upland white aster, *Aster ptarmicoides*. Because botanists noticed it occasionally hybridized with a species of goldenrod (*Solidago*), it was concluded that despite its white flower heads, it really is a goldenrod, not an aster. In 1972 it was formally moved to

Solidago. It is now known as *S. ptarmicoides*.

As a goldenrod, this white-flowered species is somewhat anomalous in a genus in which nearly all species have yellow flowers. This is also a rare example in which a change in scientific name is accompanied by a change in the common name — this plant is now known as upland white goldenrod.

More commonly, a change in genus results from a changed classification at the genus level. Two or more genera may be combined because studies show the differences between the species in the genera are less than what is usually the difference between genera.

An example would be two genera separated by only one or two prominent characteristics. Several species now in the evening primrose genus *Ludwigia* were originally placed in the genus *Jussiaea* on the basis of stamen number: eight in *Jussiaea*, four in *Ludwigia*. These species were otherwise quite similar to *Ludwigia*.

Closer studies showed that the species in *Jussiaea* did not form a closely-related group. Many were actually more closely related to species in *Ludwigia* than to other *Jussiaea*. In

keeping with the principle that a genus should contain only the most closely related species, all species formerly in *Jussiaea*, including three in Indiana, were moved to *Ludwigia*.

By the same principle, larger genera are sometimes split into two or more small genera, because the original genus was shown to consist of groups of species more closely related to other species than to each other.

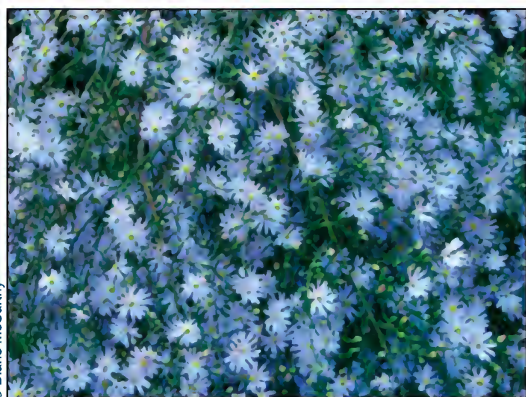
An example involving several Indiana species is the genus *Aster*. As formerly understood, *Aster* is a large genus of some 600 species occurring in temperate areas of both western and eastern hemispheres, including about 30 species in Indiana. Extensive studies of *Aster* and related genera on a worldwide basis in the 1990s showed that the traditional *Aster* contained a number of groupings not most closely related.

Accordingly, several groups of species were moved out of *Aster* into other genera, leaving the genus *Aster* with about 180 species, all but one restricted to Eurasia. The majority of North American species (including most Indiana species) are now in the genus *Symphyotrichum*.

However, some smaller genera, made up of other North American species formerly in *Aster*, are also now recognized. For example, flat-topped white aster, formerly known as *Aster umbellatus*, is now *Doellingeria umbellata*, and big-leaved aster, *Aster macrophyllus*, now goes by *Eurybia macrophylla*. Sky-blue aster, *Aster oolentangiensis*, noted in Part I as an example of the discovery of an earlier name, is now known as *Symphyotrichum oolentangiensis* — a species that has undergone two different kinds of name change.

Another example is sand cress, or lyre-leaved rock cress, common in the Indiana Dunes. This species had been included in the large genus *Arabis*, where it was known as *Arabis lyrata*. Recent worldwide studies of this genus, however, have shown that sand cress is more properly placed in the smaller genus *Arabidopsis*, where it is now known as *Arabidopsis lyrata*. Those same worldwide studies have shown that *Arabis*, traditionally understood, consists of several groups of species not closely related. As a result, most Indiana species formerly in *Arabis* are now in the genus *Boechera*.

© Diane McCarthy



Sky-blue aster is now known as *Symphyotrichum oolentangiensis* after undergoing a second change of name when studies of *Aster* and related genera resulted in removal of many species to other genera.

Names of Plants Change?

Sometimes when a species is moved from one genus to another, not only does the genus name change, but so does the specific epithet, or second name. That could happen if there is already a species in the new genus with the same specific epithet. In a recent large-scale study of the evening primrose genus *Oenothera* and related genera, it was found that the genus *Gaura*, including several species in Indiana, cannot stand as a separate genus, but must be combined with *Oenothera*. Since *Oenothera* was already a relatively large genus, the specific epithets for several *Gaura* species were already in use in the genus *Oenothera*.

The biennial gaura, *Gaura biennis*, is now known as *Oenothera gaura*, to distinguish it from common evening primrose, *Oenothera biennis*. *Gaura parviflora*, a species known in a few counties in northwestern Indiana but common on the Great Plains, is now known as *Oenothera curtiflora*, to distinguish it from small-flowered evening primrose, *O. parviflora*, known in a few scattered counties in Indiana.

Although most name changes result from a change in classification, and a few because of the discovery of older names, there are also special cases.

One of those cases involves the four Indiana species of Indian plantain. These had long been placed in the genus *Cacalia*, where they were known as *Cacalia atriplicifolia* (pale Indian plantain), *C. muehlenbergii* (great Indian plantain), *C. plantaginea* (prairie Indian plantain), and *C. suaveolens* (sweet Indian plantain).

It was recently noted that the name *Cacalia* had been applied to plants belonging to at least eight different genera worldwide, several not even closely related. A proposal was made to the International Committee on Botanical Nomenclature to formally reject the name *Cacalia* under the rule permitting such action if a name causes excessive confusion that cannot be readily rectified. The proposal was accepted. The genus name *Cacalia* cannot now be applied to any plants.

As a result, the earliest name was sought for each of the eight genera previously named *Cacalia*. For three of the Indiana species, that turned out to be *Arnoglossum*, a name used for Prairie Indian Plantain way back in 1817. For two

Nature Preserve Hikes Oct. 19

The Indiana Division of Nature Preserves is offering guided hikes at eight "seldom seen preserves" in seven counties, all on Oct. 19, beginning at 10 a.m. local time at the following nature preserves:

Crawford Co. – Leavenworth Barrens
Floyd – Brock-Sampson
Jay – Bell-Croft Woods
Lake – Clark & Pine
Lake – Liverpool
LaPorte – Springfield Fen
Monroe – Sweedy Hollow
Montgomery – Calvert-Porter

Numbers of participants will be limited.

Registration is required by calling 877-463-6367 or signing up at naturepreserves.dnr.in.gov.

Indiana species, this involved a simple replacement of the genus name; these are now known as *Arnoglossum atriplicifolium* and *A. plantagineum*.

It was independently discovered that an earlier specific epithet (*reniforme*) applies to pale Indian plantain, so that epithet replaces *muehlenbergii*, and the plant is now known as *Arnoglossum reniforme*. Finally, research going on at the same time resulted in removal of sweet Indian plantain to a different genus, so it is now known as *Hasteola suaveolens*, a change that would have occurred regardless of the *Cacalia* problem.

We have merely scratched the surface of the rules of botanical nomenclature, but the goal has been to give some insight into the reasons for name changes. Changes in names of Indiana plants often result from things that happen far beyond Indiana's borders.

With some 300,000 species of flowering plants in the world, much remains to be done to understand their relationships. New techniques of study make changes in the classification of even familiar plants inevitable. We can expect even more name changes in the future.

Michael Huft is a research associate at the Field Museum in Chicago. He has a PhD in botany from the University of Michigan.

Buzzword for Common-Sense Gardening?

Permaculture

Terminology

By Hilary Cox

In January our friend Leona, at whose house in Tucson I had been spending winters, invited me to go to a talk at Native Seed Search (shop. nativeseeds.org). The speaker was to be Toby Hemenway, author of *Gaia's Garden: A Guide to Home-Scale Permaculture*.

The actual meaning of the term "permaculture" was a new one to me, although I had heard the word bandied about.

As I listened and watched the accompanying presentation, I became uncomfortable. This "new" way of farming, especially aimed at urban farming, was older than the hills. It just had a new label. There was already a term, used in Britain for centuries, which covered the concept: husbandry. (See Wendell Berry's "Renewing Husbandry," *Orion Magazine*.)

The same thing happened with "organic" gardening. Less than a hundred years ago, organic gardening was the only type of gardening, or farming for that matter, that existed. But the "old" ways were side-lined and eventually ridiculed by agribusiness and its proponents, so that the term "organic" now has negative connotations in some circles. We will have to wait and see if "permaculture" gets the same bad rap.

Listening to Toby, I learned that permaculture's design principles are supposed to derive from systems ecology. (In my opinion, they come from 20,000 years of human agriculture!) But those principles remain sound, no matter the terminology.

Care of the earth – without which humans cannot survive ("Proper use and care of an immeasurable gift" – Wendell Berry in "The Agrarian Standard" – *Orion Magazine*)

- Care of the people – making sure they have access to resources
- Return of surplus – Reinvesting surpluses back into the system, including recycling waste
- Minimizing waste, labor and energy use – which together result in synergy

For us gardeners, these principles just seem like common sense. I learned them at the knees of my grandparents and parents and have lived my whole life accordingly.

1. Taking care of the earth, whether in the broadest sense – the planet (*an immeasurable gift*, indeed!) – or getting down to the nitty-gritty and replenishing the actual soil, adding organic matter from composted waste material at certain times of the year to ensure good plant growth – it's just what we do!

2. Gardeners are generally good "people people," some of the best at sharing their resources with others who don't have access to them.

3. The surpluses most gardeners experience have nothing to do with stock markets and greenbacks, rather a case of too much of a good thing (tomatoes, lettuce, peppers, zucchini), which we share with those less fortunate. And at the end of the year this "surplus" goes back into the soil where it belongs.

I do want to add here that even we, the gardeners, are guilty in the "big picture" of lack of reinvestment in our planet. ("Agribusiness and we, the end consumers, are the one percent using 99% of the resources. We take from, but don't give back to, everything which 'works' to keep us alive – the soil, the pollinators, the water, the air we breathe." — Dr. Hazel Cox)

4. Reduce, reuse, recycle – those are the "buzzwords" these days. And once again, we only need to look to our Victorian era grandmothers for whom this was normal life. Clothes got holes in them? Patch them. Socks? Darn them. (Do they even teach children how to darn anymore? Sew on buttons?) How many of us wore our big brother's/sister's hand-me-downs? And once the family had no further use for an item, it was passed around to other family members or friends or, eventually, the really needy. "Waste not, want not" was the credo by which people lived.

I don't think I need to point out the huge departure from these principles that has occurred around the planet in recent decades. The contrast is stark.

So if the concept, with its principles above, can take our urbanized planet by storm under this new label of "permaculture" – well, 'A rose by any other name would smell as sweet'! (William Shakespeare)

Hilary Cox is a garden designer and freelance writer and photographer.

INPAWS Supports Monarch Watch

Call for Milkweed Seed

The Monarch Watch conservation program based at the University of Kansas has requested INPAWS' assistance in spreading the word about their "Bring Back the Monarchs" campaign. The organization needs milkweed seeds collected from several states, including Indiana.

"Our goal is to plant as many milkweeds as possible to keep the monarch butterfly migration alive," says Tori Pocius, milkweed coordinator at Monarch Watch. "We provide local genotype seeds and plants to restoration sites and public gardens."

Michael Homoya of the Indiana Division of Nature Preserves cautions that INPAWS members should provide Monarch Watch only seeds of milkweeds native to Indiana for propagation in the state.

"Our goal is to plant as many milkweeds as possible to keep the monarch butterfly migration alive." — Tori Pocius

The common milkweed, *Asclepias syriaca*, occurs statewide. Of the seeds on the list of species desired by Monarch Watch, "only *Asclepias tuberosa* and *Asclepias incarnata* occur statewide," Homoya notes. "I recommend that seeds of other species be distributed only according to the distribution indicated by Charles Deam in his 1940 *Flora of Indiana*."

In June, INPAWS publicized on its Facebook and web pages the "Wild for Monarchs" campaign of Wisconsin-based nonprofit Wild Ones. The group, partnering with Monarch Watch, seeks to educate and encourage the public to plant host and nectar plants for monarchs and other butterflies. Their web site offers a list of suitable plants.

Studies have shown that the monarch population, whose larvae feed exclusively on milkweed, decreased by 58% across the Midwest from 1999 to 2010 due to herbicide use and habitat destruction.

Information about these projects can be found at bbtn@monarchwatch.org and monarchs@wildones.org.



© Bob Cook

Milkweed Seed Collection Tips

- Collect pods and remove seeds; send seeds to Monarch Watch, which will reimburse you for shipping. (E-mail milkweed@monarchwatch.org for shipping and reimbursement information.)
- Or collect pods, dry them and send to Monarch Watch.
- Use a separate container for seeds of each milkweed species.
- Collect only species appropriate to your region, and do not collect rare or endangered species. (See article for Indiana-wide species.)
- Provide collection date, city, county and state, and identify species. If unsure of the ID, send a photo of the plant.
- Collect when pods are ripe, just beginning to split, and seeds are brown.
- Wear gloves and keep milkweed sap away from your eyes.
- Be sure to remove any red and black milkweed bugs (*Oncopeltus fasciatus*), which destroy milkweed seeds.

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Check out
INPAWS'
great blog at
inpaws.org



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Submissions

All are invited to submit photos, articles, news, and event postings. Acceptance for publication is at the discretion of the editor. INPAWS welcomes differing points of view.

Please submit text and high resolution photos (300 ppi) via e-mail to journal@inpaws.org.

Submission deadlines for specific issues are:

Spring—February 23 for April 1 mailing

Summer—May 23 for July 1 mailing

Autumn—August 23 for October 1 mailing

Winter—November 23 for January 1 mailing

Mission

To promote the appreciation, preservation, conservation, utilization and scientific study of the flora native to Indiana and to educate the public about the value, beauty, diversity, and environmental importance of indigenous vegetation.

Membership

INPAWS is a not-for-profit 501(c)(3) organization open to the public at inpaws.org.

Share

Please direct Information of interest to webmaster@inpaws.org.

Save the Date!

Annual Conference is Nov. 9

Mark your calendars! The INPAWS 20th annual conference will be Saturday, Nov. 9, 8 a.m. to 5 p.m., at the Monon Community Center in Carmel, just north of Indianapolis.

Chairperson Karen LaMere says the event will revolve around the theme "Conservation: Saving Indiana's Native Plants and Wild Places."

The program offers an exciting line-up of speakers and topics:

Peter Raven, president emeritus of Missouri Botanical Garden, will be the keynote speaker. He is co-author of the best-selling textbook *Biology of Plants* and recipient of many conservation awards, including *Time* magazine's "Hero of the Planet."

Carolyn Harstad, an INPAWS co-founder and author of *Go Native!*, *Got Shade?* and *Got Sun?*, will share her gardening know-how.

Jeffrey Belth, photographer and author of *Butterflies of Indiana*, will discuss the interaction of butterflies and plants.

Sandy Belth, a naturalist with Monroe County Parks and Recreation and a Master Gardener, will present a session on landscaping and gardening for butterflies.

Mike Jenkins, associate professor of forest ecology at Purdue University, will discuss invasives management issues in the Great Smoky Mountains, with implications for Indiana's ecosystem. Jenkins is recipient of the USDA Forest Service "National Wilderness Award for Excellence in Wilderness Management Research."

Michael Homoya, IDNR Division of Nature Preserves botanist and author of *Wildflowers and Ferns of Indiana Forests*, will pose the question "Where have all the flowers gone?"


Lee Casebere, ecologist, nature photographer, and assistant director of IDNR Division of Nature Preserves, will talk about nature preserves and land protection in Indiana.

The day's activities will include book signings and sales, vendor and youth education displays.

Conference fee for members is \$50, or \$60 after Nov. 1. The cost for non-members is \$65, or \$75 after Nov. 1. Students may attend for \$35.

Registration can be done online at inpaaws.org or by returning the registration form on the mailed conference brochure. It is now possible to pay for registration or membership dues on the web site. The brochure is also available for download.


Those who bought INPAWS T-shirts that faded will be happy to know they can exchange them for new, colorfast shirts at no cost during the conference.

The Monon Center, 1235 Central Park Dr. E., is located in Carmel's Central Park. The conference will be in the East Building. 

EAST CENTRAL CHAPTER RISES AGAIN *By Tom Hohman*

For many years the East Central Chapter of INPAWS, based in the Muncie area, was one of our most active chapters. As many of the original leaders became less active over the years, the chapter eventually became dormant. In early 2012, East Central Chapter was officially dissolved. The members were divided among the Central Chapter and the newly formed North Chapter.

Earlier this year a core group started exploring the potential to reactivate the chapter. Some had been active previously, while several were new to INPAWS. They have been meeting since then and getting input from other INPAWS members in the area. Chapter bylaws have been adopted and temporary officers selected. In the August meeting of the INPAWS Board and Council, provisional approval was given to the new chapter, with final approval to come after officers are elected in a chapter-wide meeting in October.

Having this area of the state again served by a vibrant local chapter will be a big plus for INPAWS and the members in that area. 

INPAWS Helps Beautify Evansville

INPAWS In Action

By Dona Bergman

What do Keep Evansville Beautiful, the Indiana Department of Transportation, Indiana Department of Corrections, Mesker Park Zoo and Botanic Garden, Evansville Dept. of Urban Forestry, Department of Sustainability, Alcoa volunteers, Master Gardeners, Master Naturalists, Southwest Indiana Native Plant and Wildflower Society members (SWINPAWS), Anchor Industries and USI students have in common?

Only about 8,500 native grasses and wildflowers, that's all!

After over a year of planning, about 100 people converged on a plain, muddy median in the middle of U.S. Route 41, just south of the U.S. Route 57 intersection. Wearing bright yellow safety vests, they braved chilly weather and threatening rain to plant native grasses and wildflowers.

This beautification planting is part of two major initiatives: the Hoosier Heritage Roadside Program, where inmates grow seeds to gain horticulture skills while providing native plants and wildflowers to Indiana's roadside landscape, and the Airport Gateway Project, an effort to beautify main routes into the city.

This is the first project in the state for which INDOT used a structured plug planting method and the first time INDOT used Dept. of Corrections inmates to grow the plants, which saved several thousand dollars.

What was planted? Little bluestem and prairie dropseed grasses; prairie coreopsis, wild lupine, brown-eyed Susan, butterfly milkweed, purple coneflower, pale coneflower and common spiderwort.

Anchor Industries allowed use of their large tent and restrooms. INDOT provided safety training and traffic control. Most of the plants came from Putnamville Correctional Facility. Thanks to Shawn Dickerson, Urban Forestry provided chipped tree mulch and worked with the volunteers.

Keep Evansville Beautiful and INDOT will make certain the baby plants are watered this first season. They may need more mulch and some weeding. After the native plants are established, their care will be minimal.

SWINPAWS members are grateful to INDOT's Bill Fielding and Rusty Fowler; Mike McGarrah of Keep Evansville Beautiful, a Master Gardener (MG) and SWINPAWS member; Paul Bouseman, botanic curator at Mesker Park Zoo & Botanic Garden (MG & SWINPAWS); Shawn Dickerson, city arborist (MG & SWINPAWS), Davie Sue Wallace (MG & SWINPAWS), KEB director Marcia Dowell, Anchor Industries, Alcoa, and the 100 or so muddy, tired volunteers who made it possible – and fun!

Species planted included:

- Prairie coreopsis – *Coreopsis palmata*
- Wild lupine – *Lupinus perennis*
- Pale coneflower – *Echinacea pallida*
- Brown-eyed Susan – *Rudbeckia fulgida*
- Common spiderwort – *Tradescantia ohiensis*
- Butterfly milkweed – *Asclepias tuberosa*
- Purple coneflower – *Echinacea purpurea*
- Prairie dropseed – *Sporobolus heterolepis*
- Little bluestem – *Schizachyrium scoparium*

To learn more about these plants, go to:

- missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder.aspx
- INDOT Hoosier Roadside Heritage Program – in.gov/indot/2583.htm
- Indiana Master Naturalist Program – in.gov/dnr/parklake/6321.htm
- Keep Evansville Beautiful – keepevansvillebeautiful.org
- Southwestern Indiana Master Gardener Association – swimga.org
- Southwest Indiana Native Plant and Wildflower Society – inpaws.org

Dona Bergman is a SWINPAWS member and director, Evansville Department of Sustainability, Energy and Environmental Quality.

© Charles & Diane Peirce



Wild lupine (*Lupinus perennis*) was among wildflowers planted by volunteers in the median of U.S. Route 41 near Evansville.

A Remembrance

Janice Glimn-Lacy 1935–2013

By Wendy Ford

On June 21, 2013, INPAWS lost a founding member, a good friend, and someone who touched many lives in the Indianapolis community.

I knew Jan Lacy as an avid gardener and designer, a talented botanical illustrator, and a woman of surprising strength and courage. The obituary she wrote a few weeks before her death tells of an early interest in nursing and medical research, followed by marriage to Navy man Jack Lacy and the many relocations that entailed, including being evacuated with her infant son from Nicosia, Cyprus, as bullets flew during that island's erupting civil war.

Returning to civilian life, Jan found her calling and completed a BS in Botany at the University of Michigan. She then coauthored *Botany Illustrated* (Springer, 1984), a popular tool for learning plant structures, which went into a second edition in 2006.

When Jack and Jan moved to Indianapolis in 1985, Jan's interest in botany blossomed into a career in landscape design under the moniker The Flower and the Leaf. I learned a lot of what I know about gardening by editing Jan's self-published book, *What Flowers When with Hints on Home Landscaping* (1995), which was based on meticulous records that Jan kept on what was in bloom on her daily walks around her back yard.

"Not content with the status quo, Jan reinvented herself at age 67..."

I enjoyed visiting Jan's cozy home on Indianapolis's west side, and Jan was always pleased to show off her color gardens, which were featured in *Midwest Living Magazine* and in many a local garden tour. I especially enjoyed lunches on the back patio ringed by veil-like serviceberry trees.

Not content with the status quo, Jan reinvented herself at age 67 by entering IUPUI's Herron School of Art and Design. She gradu-

ated with High Distinction and a Bachelor of Fine Arts in drawing in 2008 and was on her way to making a splash in the botanical art world.

Jan believed the pulmonary fibrosis that took her life may have originated with excessive particulate matter from road and bridge construction near her home.

Her most recent book, *Growing Green, Plants for Food & Wildlife in the Midwest, A Personal Story*, will be published this fall in conjunction with the appearance of one of Jan's illustrations at an international show at the prestigious Hunt Institute at Carnegie Mellon University.

Read the full obituary at janglimn.com.

Wendy Ford, INPAWS webmaster and former journal editor, has a garden design business, Landscape Fancies, in Indianapolis.



Awards – from page 13

Applicants for "Bringing Nature Home" awards submit two to five photographs and a list of native species used. They must explain how these help the local ecosystem by providing pollen for pollinators, nectar for butterflies and birds, and fruit for birds and wildlife, and how they prevent erosion and conserve water. Two FOSH members visit each site.

Inspired by INPAWS conference speaker Doug Tallamy, Peg Mohar, former SHLT executive director, initiated the awards program to carry out the aims of his book *Bringing Nature Home*. She secured his permission to name the awards after his book.

Information about the program is available at 219-242-8558 or land@heinzetrust.org.

Barbara Plampin is a field botanist and life director of the Shirley Heinze Land Trust.

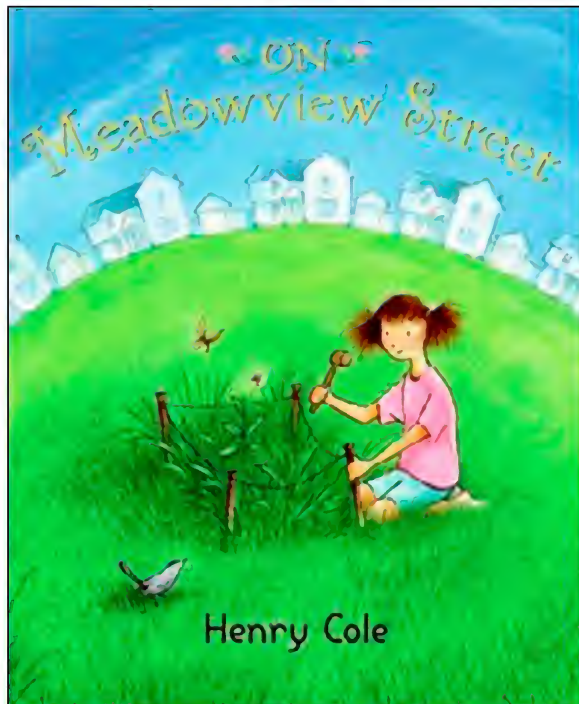
Written and illustrated by Henry Cole

On Meadowview Street

Book Review

By Donna Foster

In the charming picture book *On Meadowview Street* by Henry Cole, Caroline searches for flowers in the yard of her new home. But like all the other yards on this suburban block, hers sports only carefully tended grass. When she finds a few wildflowers, she begs her dad not to mow them down. Insects, butterflies and birds soon flutter about the posies, delighting the whole family.



To encourage more wildlife, the family adds young trees and a small pond to create homes for all kinds of critters. Inspired neighbors follow the trend. Caroline has made a difference by creating a true nature preserve in the midst of a city.

The book contains identification sketches for a few native plants that restore food and shelter for disappearing species. It's a must-read bedtime story for youngsters and a reminder to adults that caring for the

planet in a small way can have a big effect.

The book was published by HarperCollins Children's Books in 2007, and is available online and from libraries. Cole is an illustrator and children's author known for his love of nature. Some of his other titles are *I Took a Walk*, *A Nest for Celeste*, *Jack's Garden*, *The Littlest Evergreen*, and *On the Way to the Beach*. The author's web site is henrycole.net.

Donna Foster, retired librarian, now spends her time writing, volunteering and gardening.

PRESIDENT'S MESSAGE

By Art Hopkins

What great weather we've had this summer — extended periods of cool, un-humid air, with adequate rainfall well into August. I admit it has not felt entirely native to Indiana, but it's been perfect weather to be outdoors enjoying, exploring, growing, and advocating for native plants!

I hope you've been able to go on some of the guided hikes that Mike Homoya has organized. (See summaries of hike reports elsewhere in this issue.)

Another great opportunity was the September garden tour in the Fishers-Carmel area. Ann Foster, tour organizer, worked with site owners to make a spreadsheet for each site, listing native plants and their horticultural details.

Our earlier garden tours have been in the spring and mid-summer, so this year's tour was a chance to see a different aspect. One of our cherished hopes is to offer garden tours across the state so more people can participate. If your local chapter or small group would like to host a tour next year, please let me know.

Plan to attend our Annual Conference November 9 at the Monon Center in Indianapolis! We have great speakers lined up from Indiana and across the Midwest. There'll be a book sale, interesting conversations, good food and a great time.

This just in!—now you can pay your registration fee and dues online. Thanks to Ruth Ann Ingraham and Wendy Ford, INPAWS now has online payment capability. Also, you can now donate online to Letha's Fund, our program to bring children into nature in safe educational settings. Go to inpaws.org to donate, register, and stay up-to-date on all that INPAWS is doing.

See you at the conference! 🍀

"Look deep into Nature, and then you will understand everything better."

- Albert Einstein

Bringing Nature Home

Ten win awards from Heinze Trust group

By Barbara Plampin

At a Sept. 21 donor appreciation luncheon in Hobart, Friends of Shirley Heinze Land Trust (FOSH), a membership organization affiliated with Shirley Heinze Land Trust (SHLT), awarded ceramic plaques to several individuals in recognition of their native plantings.

"Bringing Nature Home" awards, now in their third year, are restricted to Lake, Porter and LaPorte counties. To be eligible, plantings must be in at least their second growing season and must use native species, defined as growing in Indiana before settlement.

Linda Alessi was chosen for her lawn-free, 100-by 300-foot city lot in Valparaiso. Linda eliminated storm water run-off by adding gravel in front and a dry creek bed in back. State-listed plants and a female Kentucky coffee tree join natives and perennials in front; in back, a male Kentucky coffee tree and other natives flourish amid established oaks and hickories.

Pat Reynolds nearly eliminated grass in her Valparaiso urban yard by using natives. Her bio-hedge includes red osier dogwood, maple leaf viburnum, snowberry, ninebark, high bush cranberry and sand cherry.

Adjacent to their newly acquired 30 acres in Valparaiso, Fred and Leslie Bamsberger used a prairie mix to create a long-season, one-acre prairie. Species include wild lupine, coreopsis, wild bergamot, ironweed, New England aster, prairie grasses and prairie sedge mix.

Larry and Joan Murphy hired environmental consulting firm Cardno J.F. New to establish and supervise not one, but two rain gardens on their postage stamp lot in Coffee Creek, Chesterton.

Lydia Miramontes Loyd's upland, fenced Michigan City lot features a wetland garden, spring ephemerals with redbud, and foundation and other plantings, including Eastern red-cedar, hazelnut, Christmas fern, and prairie dropseed. Joe Pye stands tall outside her alley fence.

Carole Stoddard and Tom Brand, Town of Pines, Porter County, achieve diversity on their acre-and-a-half secondary dune. In front of established woods, they grow spring ephemerals, shade plants, bulbs and columbine. In borders, native butterfly weed, Michigan (Turk's cap) lily, and state-

listed royal catchfly flourish among perennials.

Cardinal flower blazes away with hibiscus cultivars in Valparaiso Park District's seven bio-swales along Calumet Ave. This park district will receive one of four group awards from FOSH at the trust's November 8 annual luncheon in Schererville.



Supported by Lake County Parks, Friends of Robinson Lake, Hobart, built a native-filled rain garden to absorb parking lot run-off. Sandy O'Brien supervised the effort.

Indiana Department of Transportation, LaPorte Office, planted 233 pounds of seed of native flowers and grasses in the 17-acre interchange at State Rd. 2 and State Rd. 4 in Valparaiso. Cindy McKie was project supervisor.

Lake County's MS4 Storm Water District planted an extensive rain garden in front of Lake County's Government Center in Crown Point. Most of its plants are "nativars" (cultivars), because district personnel believe genuine natives are too tall, too messy, and too plain.

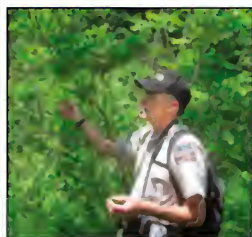
Awards rules stipulate that plantings must be free of non-natives. The non-native ban was relaxed this year to include gardens where natives out-number non-natives and which use "nativars," a controversial decision still being debated.

Award winners Larry and Joan Murphy worked with consultants from Cardno J.F. New to establish two rain gardens on their small lot in Coffee Creek, Chesterton, IN. Pictured in the garden are Larry Murphy (center), Myrna Newgent, and Warren Buckler, committee members who visited the Murphy native plantings in August.

Awards – continued on page 11

INPAWS Explores

Hikes



Fred Wooley, an interpreter at Pokagon State Park, guided hikers to explore a wetland mitigation project in Steuben County on June 8.

Shrader-Weaver Woods

By Brent Smith

The April 13 INPAWS trip to Shrader-Weaver Woods, a 100-acre DNR Nature Preserve in Fayette County, was a great success, with about 80 participants!

Many of us hugged one of the largest black walnuts in Indiana before entering the magnificent old-growth section. We noted large numbers of big black walnut, tulip poplar, black cherry, beech and sugar maple. The biggest were two bur oaks.

Due to Indiana's late cool spring, many early wildflower species were at their peak and some later ones just peeking out. Once we finished the old-growth loop trail, half the group continued on the successional trail, finding new species, including invasives such as amur honeysuckle, autumn olive, and multiflora rose.

This trail through abandoned agricultural land then enters an old-growth swampy forest. Magnificent individuals of pin oak, bur oak and white ash are present, as are skunk cabbage, marsh marigold, swamp buttercup and horsetail. We were a little early for blue-eyed Mary, abundant in this section of the preserve. Trying to catch this annual at its peak is worth a return trip.

Few places rival Shrader-Weaver for its majestic trees and beautiful spring flora. We were fortunate to see it at its near best.

Bendix Woods Preserve

By John J. Smith

These days "awesome" is overused, but it was an apt adjective for the INPAWS May 5 hike in the old-growth beech-maple forest in the State-dedicated Bendix Woods Nature Preserve in St. Joseph County.

Where in the Midwest are there more large white trillium (*Trillium grandiflorum*) interspersed with false rue anemone (*Enemion biternatum*) in 27 acres?

We found over 20 species of forbs blooming, huge numbers of prairie trillium (*T. recurvatum*) and drooping trillium (*T. flexipes*), yellow wood poppy (*Stylophorum diphyllum*), and colonies of two-leaved toothwort (*Cardamine diphylla*), the latter found only in a few Indiana counties. We

saw many other species indicative of high quality northern hardwood forests.

Over 40 persons participated, ably led by Scott Namestnik, senior project scientist and botanist, Cardno JFNew ecological consulting firm, and Deborah Marr, associate professor of biology, Indiana University—South Bend.

Pokagon's Trine SRA

By Fred Wooley

On June 8, 14 hikers joined me at Pokagon State Park to see the new Trine State Recreation Area in Steuben County. The area is noted for glacial-made kettle hole lakes, wetland fens, and high quality upland woodlands.

The INPAWS group viewed from afar the wetland mitigation project that pulled out truckloads of sand and gravel that previous owners had poured into the fen and lakeshore.

We entered the shoreline fen slowly, in single file, to have as little impact as possible on this fragile environment. Hip-deep in classic fen plants, we were flanked by a grove of tamarack trees to the west and beautiful Gentian Lake to the south. We saw shrubby cinquefoil and the early stages of big bluestem, dense blazing star, Ohio goldenrod, and brown-eyed Susan.

Then we had half the group stand still while the other half jumped. The ground rippled beneath us, revealing the muck and water world many feet below.

We are working hard to open the property to the public. We hope to host a "soft" opening this fall and an official grand opening early next year.

Prairie Creek Barrens

By Sue Arnold

The postcard Mike Homoya sent for the July 27 hike at Prairie Creek Barrens Nature Preserve failed to deter 28 of us from joining him for a sunny day at this site in Daviess County. He warned: "terrain hilly, no trails present, briers and brush, ticks and chiggers likely." He failed to mention trumpet vine (*Campsis radicans*), a vigorous climber determined to wrap our ankles, and knee-high poison ivy (*Toxicodendron radicans*).

Indiana's Wild Places

He and Harold Allison explained that the preserve hosts one of the last remnants of sand barrens in southwest Indiana. (Access is by permission only.) Begun 10 years ago, restoration has involved over 100 volunteers, including INPAWS members. In the first five years, thousands of plugs were planted.

Many uncommon species are present, including at least 10 state-listed rare species. Maryland meadow beauty (*Rhexia mariana*) was especially beautiful with rosy flowers and yellow-orange stamens. Globally threatened creeping St. Johnswort (*Hypericum adpressum*) thrives in the damp sand, while sand hickories (*Carya pallida*) grow nearby on high ridges at the northern range of their habitat.

Mike and Harold remain enthusiastic about the restoration project, despite set-backs such as critters who pulled up (but did not eat) hundreds of hand-raised, hand-planted plugs.

Muscatatuck Wildlife Refuge

By Holly Faust

August 17 turned out to be one great trip to the Muscatatuck Wildlife Refuge near Seymour.

We saw Joe Pye weed all along US Highway 50 to the entrance and all kinds of natives growing along the forest's edge. My favorite was the big pink native *Hibiscus moscheutos*.

Our guide was Daniel Boone, field botanist and certified arborist for Bartlett Tree Experts. We drove to the first site and disappeared into the woods to find a very dry wetland/alkaline seep. We encountered sedge muskingum (*Carex muskingumensis*), aquatic milkweed (*Asclepias perennis*) and lizard's tail (*Saururus cernuus*), blooming despite the dryness.

We walked over tall crayfish chimneys and passed more fungus than a mycologist could take. We ran into climbing hempweed (*Mikania scandens*) competing with some type of parasitic dodder, amidst blooming arrowhead (*Sagittaria latifolia*).

We saw a nice specimen of water parsnip (*Sium suave*), walked past a little buttonbush (*Cephalanthus occidentalis*), then ran into Midwestern arrowhead (*Sagittaria brevirostra*) with its burs on. We saw false water-pepper and the small flower of a plantain of some sort. We kept a lookout for the elusive (due to its height) overcup oak and passed ironweed, green ash, Walter's St.

Johnswort and smelly camphorweed. The forest floor was carpeted with invasive moneywort. Clearweed and false nettle were plentiful.

Dan showed us the difference between swamp cottonwood and Eastern cottonwood. After lunch, we drove to another area where we headed off straight into invasive multiflora rose toughing it out with native greenbrier.



We headed into the acid seep, which abounded in ferns: Christmas, New York, cinnamon, green lady's, and beech fern, to name a few. We also saw cranefly orchids, doll's eyes (white baneberry), spicebush, beech trees (some with woolly aphids), Indian pipe, Indian cucumber root (in berry), Virginia jumpseed, and American ginseng. We found the elusive *Platanthera* orchid but were not sure which one, possibly *P. clavellata*.

In trying to keep up with Dan as he was looking for black alder, I stepped into – and was briefly stuck in – the smelly acid seep. This is why one does field botany with others!

Dan and his sidekick Andrew Gibson, a student from Ohio, were very informative and enthusiastic – and in much better shape, physically and botanically, than I was!

These reports have been excerpted for the Journal. To read full reports, visit INPAWS.org.

*At Pokagon Trine State Recreation Area, tamarack trees (*Larix laricina*) and blazing star (*Liatris spicata*) flank a shoreline fen where INPAWS hikers treaded as gently as possible out of respect for the fragility of the the recently restored habitat.*



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Host Plants

Berries Bring Birds

Berries and wild grapes lure Cedar Waxwings to glean fruit, often in large flocks that arrive noisily and depart suddenly. Waxwings are known to occasionally pass a berry down a row of birds sitting on a branch until one bird eats it. They can also reportedly get intoxicated from eating fermenting fruit. When they're not eating berries, they're catching insects. In spring, they feed on buds, sap, and flowers of cottonwood, maple, and oak trees.

The Cedar Waxwing (*Bombycilla cedrorum*) is a year-round resident of the northern half of Indiana and a winter-only visitor to the southern half of the state. This crested, mostly brown bird is unmistakable for its black mask, the waxy red tips of its wing feathers, and the yellow bar at the tip of its gray tail.

According to David Sibley's *Guide to Bird Life & Behavior*, "Cedar Waxwings with orange tail bands have become increasingly common since the early 1960s, when exotic shrub honeysuckles (*Lonicera* species) became widely established in landscaping practices." Moreover, by feeding on the invasive honeysuckles, Waxwings help spread them.

Gardeners can attract Cedar Waxwings by cultivating native plants that produce small berries: pokeweed, dogwood, serviceberry (pictured), winterberry, hawthorn, viburnum, cedar, and juniper.



inpaws journal

Indiana Native Plant and Wildflower Society

Winter 2014

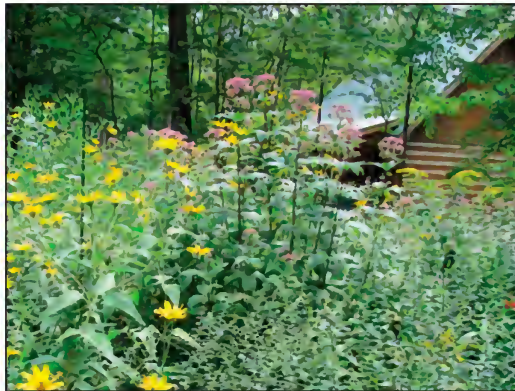
Resurrecting Meadows

By David Savage

Early settlers of the lower Midwest wrote glowingly of beautiful, flowering meadows and of prairies filled with a blaze of color. There is a yearning today to try to recreate these visions on a smaller scale. The words prairie and meadow are being heard more often when talking with gardeners and in everyday conversation.

from spring into fall, wonderful wildlife and lovely butterflies, a meadow may be just the thing. Other important benefits of meadows include carbon sequestration and filtering of pollutants.

Meadows – continued on page 4



David Savage

Thinking of a prairie calls up a vision of miles and miles of tall, waving native grasses and forbs. Meadows bring to mind a large area of unowned land in a rural setting with grasses and flowers that may be cut for hay. A prairie is usually much larger, with a higher percentage of grasses. A meadow is typically smaller and dominated by flowers.

Over the past 20 or 30 years, smaller prairie and meadow gardens have increased in popularity as people become more aware of the advantages of this type of landscaping. Meadows offer strong practical advantages. If you would like to mow less grass and enjoy savings on fertilizer and lawnmower fuel, a meadow may be appropriate. (Be sure to check on your local ordinances before turning your front yard into a meadow.) If you would like to cover a bothersome, unsightly area, a small meadow may do the job. If you want beautiful flowers

Inside

Awards	14
Conference	9
Garden Great	16
INPAWS in Action	10, 15
Hike	13
Issues	6
News	12, 13

Speak out!

Statehouse Conservation Day January 28

Meet your legislators at the Indiana Conservation Alliance (INCA) reception and tell them how important conservation and preservation of natural resources are to you and to all. Past Lt. Governor Becky Skillman will speak and INCA will present "Conservationist of the Year" awards to two legislators.

- 8:30 Registration, IN Gov't Center
- 9:00 Info session on state budget process and INCA priorities
- 11:00 Reception in Statehouse Atrium

The event is FREE but registration is requested at <http://conservationday.eventbrite.com>. For more on how to impact legislation see page 3 and 12.

What Nature Does in Spring

By Michael A. Homoya

It's mid-February, you're on a hiking trail in Turkey Run State Park, and the dripping you hear ahead is more than falling drops of water. It's a death knell. Even though the temperature is quite cold, one of those magnificent icicles that drape Rocky Hollow's cliffs is dying. Not a typical death, where stillness pervades, but one of movement and change.



icicles cling to rock faces at Turkey Run State Park. A celandine poppy flower emerges.



Richard Fields

Such drama is the work of the sun, which, being positioned higher in the sky after each day's passing, is directly illuminating and melting our sparkling trident of ice. Although ice will reform after sunset, rebuilding the remaining icicle to near its former glory, a chink in winter's armor has nevertheless been made.

Even though the early signs of winter's waning may seem unimpressive to us, to the wild things they provide notice that the big dance is about to begin. Soon birds will pour forth song, salamanders and frogs will seek out vernal pools, and swarms of midge flies will take to the air.

Those that have waited the longest for spring's arrival are poised to explode into a flurry of riotous

living. And a riot it will be, albeit a silent one, as this is an explosion not of dynamite, but of plant growth. Responding to just a few days of warm temperatures and rain, a multitude of plant shoots and buds will pierce upward through the soil's surface, transforming a drab gray landscape into an ocean of green. Don't tell these plants there is still almost a calendar month of winter remaining. More cold days ahead or not, there is no going back.

These plants are on a mission, reaching into the atmosphere to capture the energy of the sun. Light from the sun is sustenance for plants; without it they could not exist. Although not obvious to us, the plants of Turkey Run's forest floor struggle and compete for this precious commodity. It's not only a competition with each other, but a race against the clock, because the available light will quickly diminish.

Early rising wildflowers are what botanists call spring ephemerals. Simply put, these are plants that are present in the spring and evident for only a short period. Emerging in late winter and early spring, they flower, fruit and disperse seed in a matter of a few weeks. During this short time, the ephemeral wildflowers bask in the sunlight that passes unimpeded through the naked tree limbs above. When the forest trees have fully leafed out, the ephemerals turn in for an extended period of dormancy. It will be almost a full year before their return.

The mass blooming of spring ephemerals provides one of the most spectacular wildflower displays anywhere. Thousands, if not millions of flowers of several species carpet the forest floor, creating a scene unparalleled in even the most well-tended gardens. Spring beauty, Dutchman's breeches, harbinger of spring, toothwort, trout-lily, blue-eyed Mary, purple cress and bluebells are a few of the classic spring wildflowers.

The most common ephemeral is spring beauty. A member of the purslane (rose moss) family, spring beauty occurs in every county of the state. Although growing mostly in forests, it is especially tolerant of disturbance, and even can be found in some lawns (but not highly fertilized ones). Being a spring ephemeral, it often can "do its thing" before Lawnmower Man comes around.

Another well-known spring ephemeral is the bluebell. This magnificently beautiful wildflower is most at home in floodplain forests, but will grow in much drier sites. Where bluebells and blue-eyed Mary

Spring – continued next page

Track and Support

Conservation Legislation

By Jane Savage

It has been our experience when moving to a new area that it often takes time to find organizations aligned with our interests. Before David and I moved to Zionsville from New Jersey a decade ago, we were already members of INPAWS. It was a perfect fit because, as avid gardeners, we were becoming tuned in to the importance of native plants and habitat preservation.

A few years ago we became INPAWS' co-chairs of conservation and are its representatives to the Indiana Conservation Alliance (INCA), a group of more than 25 organizations sharing a common interest in the protection, stewardship, and sustainable use of Indiana's natural resources.

As INPAWS' representatives to INCA, our awareness of the environmental issues facing Indiana and our interest in tracking conservation legislation has grown. We have come to appreciate the goals and efforts of many other non-profit conservation organizations. One such organization is the Hoosier Environmental Council (HEC).

The HEC is celebrating 30 years of cooperation among local and statewide environmental groups with professional staff who work to expand advocacy and grassroots organizing efforts to help make Indiana an attractive place to live and work. The Council's goal is to act as a watchdog of Indiana's environmental regulatory agencies. HEC remains a constant voice in the legislature.

The HEC Website www.hecweb.org, provides a wealth of information about HEC's mission, partners, events and action alerts, and ways to "green" your community. HEC's proposed legislation can be tracked on their Website under "Bill Watch 2014" and on Facebook and Twitter.

Prior to the Indiana General Assembly, which will be in session January 13 to March 14, check the HEC Website's "Bill Watch 2014" to follow the progress of HEC-sponsored bills. If the issues are something you feel strongly about call, text, or write your House and Senate representatives. Become part of the grassroots movement!

Jane Savage is co-chair of conservation on the INPAWS board, a member of the board of the Brown County Native Woodlands Project, and a Boone County Master Gardener.

Spring – from page 4

grow together in great masses, the sight is unforgettable.

Not all early blooming wildflowers are spring ephemerals. One of the earliest to bloom in the state is skunk cabbage. This is a plant of seepage swamps, and its cluster of small flowers can be found as early as late January in southern Indiana and mid-February in the north. Skunk cabbage is remarkable in that it can generate minute amounts of metabolic heat, apparently to keep its flowers warm during the remaining cold temperatures of the season. Even snow can be melted by the heat they produce. After flowering, huge cabbage-like leaves unfold that persist well in to summer.

Another early bloomer is snow trillium. This attractive wildflower is the first of Indiana's trillium species to bloom, flowering as early as late February some years. Typically found on steep forested slopes, it blooms so early that it often gets sprinkled with late season snow, hence the name "snow" trillium. The plant, like so many of the very early bloomers, has flowers for only a very short time, so observing them requires a watchful eye on the weather. Many a person has visited a population of snow trillium in early spring, only to arrive too late to see peak blooming.

As spring progresses and ephemeral wildflowers disappear, the pace is more casual. The next wildflowers coming up are not under the time constraints of their early-rising neighbors, as they have all of the remaining growing season to prosper. Since the ephemerals have already received their needs from the environment, there is more room, moisture and nutrients for the later ones.

It will be a long time before icicles appear again at Rocky Hollow. A full growing season and autumn will come first. Gradually, daylight hours shorten, temperatures drop, and winter will again take its hold. Spring will seem ever so far away. But take heart – the vernal renewal of life is a tradition since the beginning of time, and nothing will get in its way, not even Rocky Hollow ice.

Michael Homoya, a botanist for the Indiana Division of Nature Preserves since 1982, is the author of Wildflowers and Ferns of Indiana Forests: A Field Guide, and Orchids of Indiana, both from IU Press.

Reprinted from Outdoor Indiana, March/April, 1996, with permission from the Indiana DNR



Richard Fields



Possessing the remarkable ability to generate some of its own heat, skunk cabbage often appears even before the snow is gone (top). Virginia bluebells in bloom along the Wabash Heritage Trail in Tippecanoe County.

Continued from page 1

Small Meadows:

Creating a meadow takes much patience and determination but the results can be incredibly rewarding. Sophisticated horticulturalists and gardeners have come to grief in their initial attempts to start a meadow. At River Farm, home of the American Horticultural Society in Virginia, two acres that once had been a field and subsequently a lawn were disc-harrowed and seeded with a wildflower mix. Quickly the entire two

acres produced a bumper crop of pokeweed, probably because the harrowing brought to the surface pokeweed seeds that had lain dormant for over 40 years.

A well-known gardener and writer learned the hard way that it is not easy to have the meadow of your dreams. She simply let the pasture grass grow, mowing it only once a year in late fall. For the first few years, tall wavy grasses dominated and slowly a few asters and goldenrods moved in. But soon vetches and bindweed, followed by alfalfa, began to take over large swathes, pushing out grasses and flowers.

She realized she needed help and called in a professional designer of native meadows.

By following some tried and true steps when establishing a meadow, most pitfalls can be avoided. Recent books give detailed step-by-step instructions for meadow development and maintenance. It is generally agreed that a four-step process should be followed: (1) eliminate weeds, (2) sow seed and plant plugs and/or potted plants, (3) water and weed, (4) mow or burn periodically. However, there are many ways of carrying out each of these steps.

In September, 2012, the Brown County Native Woodlands Project, at its annual field day "Nature Daze," arranged a discussion of small meadows

with panelists who could offer practical, hands-on advice from their own experiences in developing and maintaining small meadows ranging in size from one-eighth of an acre to three acres. Here are highlights from their comments.

Site Preparation

The first step in making a meadow is eradication of the existing vegetation, with minimal soil disturbance. This may be done by smothering the vegetation with plastic sheeting, by stripping out the vegetation with a sod cutter, by spraying with an organic herbicide, or by singeing the vegetation with a flamethrower. Based on experience in south-central Indiana, it is recommended to use at least two applications of glyphosate several months apart. Plugs may then be planted with an auger or by hand a month or two after the last application of the herbicide.

Lawson Ridge Meadow

Ruth Ann Ingraham developed this Brown County meadow in 1991 on an eighth of an acre. The gently sloping plot had been a traditional lawn on both sides of a driveway. Several false starts were overcome before a beautiful meadow was finally obtained. The let-it-be / wait-and-see approach was tried first with addition of seeds from native plants found in an old cemetery in Indiana. Second, sheets of black plastic were used to smother the area, but they were removed too soon and the result was mainly weeds. Third, after spraying with herbicide, a truly beautiful meadow of butterfly milkweed, black-eyed Susan, coneflower, goldenrods, cup plant, bee balm, false indigo, phlox, ironweed, false sunflower, liatris, grasses, sedges and many other native plants were in bloom after four years. Maintenance is by burning one-third of the meadow each year. This allows wildlife to move from the area being burned to the undisturbed part of the meadow.

Butler University Prairie

This prairie was started from seed in 1987 on a three-acre level field along the western side of the canal near Butler University in Indianapolis. The prairie combines elements of several different prairie types in its planting design, taking



David Savare

Practical & Beautiful

advantage of wetter and drier zones of the land. Originally the western half of the field was planted with tall grass prairie mix, the eastern half with short grasses. A mature meadow of colorful flowers spread across the entire three acres after about five years. Maintenance is by prescribed burning of the entire prairie every three to five years, supplemented by work with loppers and herbicide to keep down woody growth. The prairie is used by the university mainly as an outdoor laboratory for ecology studies (e.g., demonstration of different habitat types), a public education resource and as a natural area for birds and wildlife. Information and photos of native prairie plants are online at www.butler.edu/herbarium/prairie.

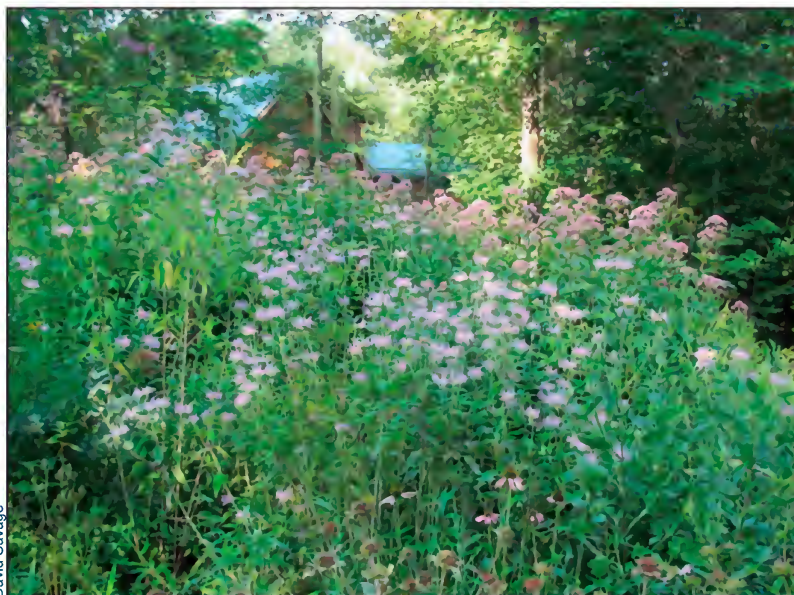
Bluebird Trail Meadow

In 2004 a sloping, 100-by-50-foot area over a septic field was cleared in a wooded region in Brown County by Jane and David Savage. Starter grass seed had been put down the year before to stabilize the soil. The area was cleared of vegetation by skimming off grass with a shovel; herbicide was used in areas containing a thick growth of fescue. Potted plants with well-developed roots were planted rather than seeds or plugs.

About 20 species of native flowers were originally installed with some grasses. Holes were dug 12 to 18 inches apart, wide enough to allow plants to bush out or spread but close enough to keep down weeds. Most plants of the same species were planted in clusters of three to six. By 2007 an attractive meadow of colorful native flowers was attracting birds, butterflies, bees and other pollinators. Flowers bloom from the first warm days of spring until hard frost. In the spring, golden ragwort, Eastern bluestar, false indigo, then beardtongue, meadow rue, and Culver's root are first to flower. The meadow then seems to pause, perhaps waiting for the ground to warm. At the very end of June and into early July, black-eyed Susan, phlox and common milkweed appear. By the middle of July to the end of August, the meadow is a profusion of color with Joe-Pye weed, black-eyed Susan, purple and grey-headed coneflowers, mountain mint, hyssop, spiderwort, bee balm, false sunflower. In August come the early goldenrods, downy

sunflower, ironweed, and white turtlehead. Asters and goldenrods bloom through September into October, depending on the weather.

For maintenance, flower and grass stalks were cut back with clippers each February and in 2011 the entire meadow was burned. This meadow has survived three consecutive years of summer drought (2011-2013). Occasionally native plants are added and seed thrown down in bare areas. Some weeding is needed periodically, especially



David Savage

to deal with invasive plants such as Japanese stilt grass which will grow in the smallest area of open soil.

Undoubtedly the interest in incorporating small meadows into garden designs will increase as the benefits of this type of landscaping are more widely recognized.

David Savage is co-chair of conservation on the INPAWS board, a member of the board of the Brown County Native Woodlands Project, and a member of the steering committee of Southern Indiana Cooperative Invasives Management.

Contributors include Rebecca Dolan, Ruth Ann Ingraham, Dan McGuckin and Jane Savage. References to works cited are at inpaws.org.

INPAWS' Deer Stand

By Patricia Happel Cornwell

On Nov. 12 the INPAWS council passed a resolution adopting this position statement on deer overpopulation:

Due to the negative impact on native vegetation of an unnaturally large deer herd in Indiana, the Indiana Native Plant and Wildflower Society supports a reduction in the number of deer in this state. This reduction in numbers should be based on sound science and game management principles, as determined by the Indiana Department of Natural Resources.

The move is a response to discussions generated by public meetings held last fall by the Indiana Department of Natural Resources to gain input into the State Wildlife Action Plan.

INPAWS members Tom Hohman and Jane and David Savage attended the DNR session in Indianapolis. North chapter president Steve Sass attended the Lakeville meeting, as did member Linda Byer in her capacity as biologist for the Division of Fish and Wildlife.

During the INPAWS council's discussion, Glenn Lange, formerly of the Division of Fish and Wildlife, said most biologists in the division believe there are too many white-tailed deer in some parks, but opinions differ on the optimum number.

Speaking from The Nature Conservancy perspective, Ellen Jacquart said deer are destroying every nature preserve. She told of visiting a certain preserve and seeing a large colony of puccoon, every specimen with its blossoms bitten off.

Tom Hohman described hiking Brown County Park in the early 1990s and thinking it was boring because nothing grew under the trees. Hiking the same area after a deer hunt, he was struck by the return of varied vegetation.

INPAWS historian Ruth Ann Ingraham pointed out that there was precedent for INPAWS support of reducing the deer population. In March, 1995, the council approved a

resolution to "enable and enhance the ability of the Indiana Department of Natural Resources to protect native flora in Indiana's state parks" by allowing managed deer culls.

Deer were hunted to extirpation in Indiana by the end of the 19th century. The last deer then reported in the state was in Knox County in 1893 (Mumford and Whitaker, *Mammals of Indiana*, 2010). The DNR's Division of Fish and Game (now Division of Fish and Wildlife) restocked the state in 1934 with about 400 animals from neighboring states. By 1943, they had more than doubled in number, and by 1946 crop damage by deer was becoming frequent.


Indiana instituted a deer hunting season in 1951, when the population had reached between 5,000 and 20,000, according to dif-

ferent estimates. One estimate places the state's current population of white-tailed deer at approximately 50 million (Indiansportsman.com).

Overpopulation contributes to disease and starvation among

deer whose habitat is continually dwindling. Destruction of crops, orchards, and native understory in forests is an undeniable indicator of deer overpopulation. Collisions with vehicles are another.

INPAWS webmaster Wendy Ford hopes to soon have information on this topic, with links to relevant Websites, on inpaws.org.

Ford said, "It seems we have a job to do to educate the public about the downside of deer, especially their threat to Indiana flora." 

"It seems we have a job to do to educate the public about the downside of deer, especially their threat to Indiana flora."

-Wendy Ford

"To a person uninstructed in natural history, his country or seaside stroll is a walk through a gallery filled with wonderful works of art, nine-tenths of which have their faces turned to the wall. "

~ Thomas Huxley (1825-1895)

The Highbush Cranberry Problem

By Barbara Plampin

Most people who plant American highbush cranberry (here, I'll call it AHBC; in botany, it's *Viburnum opulus* var. *americanum*, formerly *V. trilobum*) are unwittingly planting the European species (EHBC, *V. opulus* var. *opulus*, formerly *V. opulus*).

AHBC is state-endangered (only one to five sites in Indiana) and EHBC is invasive, introduced from Europe. Though botanists have lumped the two species, Swink and Wilhelm (1994), Voss and Reznicek (2012), and the USDA have split them. *Flora of North America* has not yet published on viburnums.

The two species differ in habitat and appearance. Swink and Wilhelm place AHBC in rich woods and in bogs. Writing about Michigan, Voss and Reznicek give six habitats, all damp.

EHBC is an ornamental whose fruits birds distribute to often degraded woods and thickets after they've eaten all the other fruits they prefer. Distribution has been going on at least since 1785, when, says Ann Leighton (1976), George Mason gave George Washington "English guelder rose" (EHBC) plants.

In Moerman's *Native American Ethnobotany* (1998), I counted 10 Native American tribes using EHBC versus seven using AHBC. No wonder people think EHBC is native!

Both species have tri-lobed leaves, flat plates of larger white sterile flowers surrounding small fertile white ones, and translucent vermillion cranberry-like fruits.

The differences are subtle, so it helps to use a hand lens to examine leaf hairs and glands and a ruler to measure the central lobes of the leaves. Flat hairs scattered over the leaf top indicate AHBC. Leaves of EHCB are generally smooth with hairs, if any, confined to leaf edges.

In AHBC, the glands just below the leaf are somewhat stalked and flat at the apex; in EHBC, glands are sessile and somewhat concave or pitted at the apex.

To see these differences, says Scott Namestnik, a botanist at Cardno JF New, glands must be examined from the side or underneath the leaf stalk, as they are often turned outward.

Voss and Reznicek state that leaves of AHBC, especially the youngest ones on longer shoots, have middle lobes "definitely longer than wide." Here a ruler might be useful.

Namestnik writes, "You wouldn't believe how many times people have told me they have the native, only for me to check their plants and determine that, in fact, they have the non-native ... It's very frustrating. I can guarantee that native plant nurseries are selling the invasive as the native, and part of the problem results from the nomenclature. Many nurseries think because they're selling *Viburnum opulus*, they're selling the



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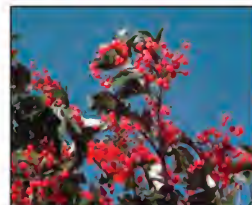
native; they don't even realize there are native and non-native varieties. In addition, the gland distinction causes a lot of problems."

So, in good faith, EHBC gets planted in the mass at such places as Striebel Pond in Michigan City, a deed Steve Sass of INPAWS North Chapter has noted. Heather Holm warns Minnesota readers about the confusion at nativeplantwildlifegarden.com.

AHBC suppliers appear limited. Missouri Botanic Garden lists only American Native Nursery, Quakertown, PA, and Namestnik says that Alpha Nurseries, Holland, MI, has a couple of AHBC shrubs in production and should have AHBC in stock very soon.

Because AHBC is endangered in Indiana, Namestnik says, "It probably doesn't belong in the places people are trying to plant it."

Barbara Plampin is a life director of the Shirley Heinze Land Trust and a field botanist. She has a PhD in English and lives in the Indiana Dunes.



UConn.edu

The American variety of the highbush cranberry, shown in bloom (top) is endangered in Indiana, and not to be confused with the European variety (above) is distributed by birds.

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Please submit text and high resolution photos (300 ppi) via e-mail to journal@inpaws.org.

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Annual Conference

Flora, fauna and fun

By Patricia Happel Cornwell

A crowd of 230 native plant lovers packed Monon Community Center in Carmel's Central Park Nov. 9 for INPAWS' 20th annual conference. The theme, "Saving Indiana's Native Plants and Wild Places," was reflected in speakers' topics and lively table discussions.

Conference chair Karen LaMere emceed the program, which featured keynote speaker Dr. Peter Raven's presentation on "Conserving Biodiversity in a Rapidly Changing World."

Dr. Raven, president emeritus of Missouri Botanical Garden, placed the efforts of groups such as INPAWS in a global context, citing the importance of resource and species conservation for sustainability and social justice.

Dr. Michael Jenkins, of Purdue University's department of forestry and natural resources, spoke on "Threats to Native Plant Diversity in Indiana Forests." He cited habitat destruction, climate change, exotic plant species, and disturbance by fire, wind, humans, deer, non-native insects and diseases.

The team of Jeffrey and Sandy Belth addressed the inter-dependence of native plants and butterflies. Jeffrey, author of *Butterflies of Indiana: A Field Guide*, spoke on "Butterflies and Indiana's Natural Regions" and Sandy presented practical tips on "Gardening for Butterflies."

A light-hearted interlude arrived when Mike Homoya entered the room dressed as a hippie and whistling "Where Have All the Flowers Gone?", the topic of his presentation. He discussed species that have become rare or been extirpated and efforts to reestablish populations of the most fragile species. He is the author of *Wildflowers and Ferns of Indiana* and *Orchids of Indiana*.

"Think Outside the Box – Add Native Plants to Your Garden" was Carolyn Harstad's challenge to conference-goers. The author of *Go Native!*, *Got Shade?* and *Got Sun?* showed photos of wildflower landscaping suitable for urban residential neighborhoods.

Lee Casebere, retiring assistant director of the Department of Natural Resources Division of Nature Preserves, reviewed the history of the state's efforts to preserve native habitats since

the division's inception in 1938. There are now 256 dedicated nature preserves in Indiana, protecting over 46,000 acres in 68 counties.

At the conference's business meeting, the following slate of officers was elected for 2014-15.

President: Jeff Pitts, vice-president: Karen Bird, treasurer: Marilyn Froberg (continuing from 2012-2013), corresponding secretary:



Sharon Patterson, recording secretary: Amy Perry (continuing from 2012-2013).

Ann Foster presented a synopsis of a new INPAWS youth education effort, the Native Plant Wizard program, in which children in 4th and 5th grades can complete 12 of 20 activities to earn a patch. Details are at inpaws.org under Education. The spring issue of INPAWS Journal will carry a full description of the program.

Next year's conference will be at the Bloomington Conference Center Nov. 1.

Patricia Happel Cornwell is an Indiana Master Naturalist and editor of the INPAWS journal.

Mike Homoya presented a copy of The Natural Heritage of Indiana from IU Press to Dr. Peter Raven as token of appreciation for his keynote address at INPAWS' 2013 annual conference.

Feb. 1 is Small Grants Deadline

INPAWS In Action

By Jackie Luzar

The deadline for 2014 INPAWS small grants applications is fast approaching – Feb. 1! INPAWS encourages members and non-members to seek funding for projects that promote appreciation, preservation, conservation, utilization and scientific study of flora native to Indiana. Each year, proposals from all corners of Indiana are considered, from urban to rural settings.



Jackie Luzar

Representatives of several organizations celebrated the Nov. 13 opening of a new Central Indiana Land Trust property, the 109-acre Laura Hare Preserve at Blossom Hollow, located in Johnson County near Trafalgar. Immediately left of the sign is the Land Trust's interim executive director Cliff Chapman. Fourth from the sign at right is Tom Hohman, INPAWS past president. INPAWS contributed \$2,000 to the acquisition costs in 2011, and its Central Chapter gave another \$500.

The small grants program funds diverse projects that clearly communicate how they correspond with the mission of INPAWS. Applicants are advised to connect with the mission in their descriptions and focus on the INPAWS-related connection, especially if it is to be a portion of a larger project.

In 2013, funded projects associated with graduate student research included exploration of prairie establishment, pollinators, and invasive garlic mustard. Some projects that involved actual planting included establishment of prairie grass, woodland restoration, demonstration rain gardens, and native gardens for the education of children.

The small grants program may fund an individual project up to \$1,000 in a single year, and INPAWS support may be used in conjunction with other funding sources. Requests that exceed \$1,000 are considered large grants and do not go through the small grants program.

Financial support for larger grants may be obtained by presenting a project for consid-

eration to the INPAWS council at a quarterly meeting. Examples of large grants include production of a video based on Marion Jackson's *Natural Heritage of Indiana* and support for land trusts to purchase and preserve ecologically significant land.

Funding for school and youth programs to enable children to experience nature in an educational context may be requested through INPAWS' Letha's Youth Outdoors Fund.

Applicants who propose plantings as part of a project must submit a plant list showing native and non-invasive species. Any project containing known invasive species will not receive INPAWS funding.

A detailed list of application requirements is in the "Small Grants Program" listing at the About Us link of the INPAWS Website. Questions may be directed at any time to smallgrants@inpaws.org.

Jackie Luzar chairs the INPAWS grants and awards committee.

**"O Earth! O Earth!
When will we hear you sing,
arising from our grassy hills?"**

~ From the poem "Earth" by Thomas Merton

Win for Natives – from page 14

participate in the careful stewardship, wise planning, and artful design of our cultural and natural environments." This mission is almost a restatement of the INPAWS mission. Sustainability is a frequent goal of landscape architecture projects: in the other awards that were presented, green aspects and sustainability were mentioned often. I felt I was with kindred spirits.

So if you meet a landscape architect, even if he or she isn't an INPAWS member, you'll know their professional values are compatible with ours.

Amy Perry is a retired technical writer, an Advanced Master Gardener, a Master Naturalist, and a Wildlife Habitat Steward.

Many Firsts for Equinox Tour

By Ann Foster

The day of the autumnal equinox, September 22, was a beautiful sunny day for the INPAWS fall garden tour. The six garden sites (four residences, one church, one community park and pond) and four "drive-by points of interest" (two parks, one municipal property, one nature preserve) were in full fall glory.

The theme of the tour was learning more about native plants and wildlife environments. Featured plant, shrub and tree names, years the gardens were begun, and wildlife attracted were indicated on labels throughout the sites.

Nearly 200 people registered at Geist Christian Church in Fishers, where 20 acres are dedicated to native plants and wildlife ("Wildlife Corridor: Connecting Church and Community"). Cheryl Shearer, INPAWS member and church member, arranged for the tour to begin at the church, where gardens include a butterfly garden (partially financed by an INPAWS grant), a rain garden (one of six on the property), and an outdoor classroom by a stream, accessed through a three-acre prairie.

Dan McCord, a passionate native plant gardener, was responsible for helping his community save \$8,000 a year in mowing costs by establishing entry way and pond-edge plantings and a nature park in the community area ("Community Savings") of his neighborhood. The McCord backyard ("Evolving Habitat") is a wildlife habitat filled with native plants. Numerous bird and rare butterfly sightings have been made there.

"Prairie Plus," the gardens of Amy Perry, offered two lovely prairie areas, a butterfly/bird garden, two wooded areas, a rain garden and a bio-swale which keeps water rolling down a slope from flooding into the cul-de-sac. Amy and her husband are avid birdwatchers who have identified more than 20 species in their yard as well as many four-legged creatures.

Going beyond labeling plants, George Peregrim provided photographs of the blooming of many plants that were not in autumn bloom; he also provided plant seeds to people

interested in starting native plantings. His property ("100+ Natives") contains two rain gardens, a woodland and a 2,000-square-foot "native island" on one side of the property, at the corner of two streets, which provides a biological screen for the house.

Suzanne Stevens ("Going Native") offered a view of many gardens planted over time since the mid-1990s. As she learned more about natives and pollinators, her gardens became more focused on natives. The woodland area in the back of the property is over 90 percent native. The property contains many native shrubs and trees that form a bio-hedge to reduce traffic sounds. A prairie sampler combined with a rain garden handles water issues on the property.

The four "Drive By Points of Interest" included West and Central Parks in Carmel, Wapihani Nature Preserve, and Fishers Town Hall Pond-Edge Enhancement. These sites offered opportunities to view environments in which native plants, shrubs and trees enhance public properties.

An Excel spreadsheet with plant information (sunlight, water, dimensions, bloom color and month) was developed for the tour and is available on the INPAWS Website in the 2013 tour information.

Ann Foster chaired the 2013 Garden Tour committee.

"Seen closely, the snow is a tangle of mirrored stars, each one flashing as its surface aligns with the sun and my eye. ... Hundreds of these exquisite ice flakes crowd onto one fingertip. How is such beauty born?"

~ The Forest Unseen,
David G. Haskell



During the equinox tour, in Amy Perry's "Prairie Plus" gardens, signs identified plants and were coded by color with red signifying sun lovers, yellow for part sun, and blue for shade.

Land Buys to Open Areas to Hoosiers

Efforts by the Indiana Wildlife Federation (IWF) have yielded a half-million dollars to invest in land acquisitions as part of a modified consent decree with Indiana Michigan Power (I&M).

"This will not only protect and open new lands for outdoor enthusiasts of all kinds, but will also result in improvements in our air quality over time," said IWF executive director Barbara Simpson. "We're working with a lot of folks to leverage these settlement dollars with other sources of funding to purchase strategic properties to increase wildlife habitat in permanently protected areas that will be available to the public."

Properties currently identified for purchase under the I&M grant include:

- Two tracts totaling 287 acres in the Patoka River National Wildlife Refuge and Management Area that will be open to hunting, fishing, hiking, photography and wildlife viewing

- A 343-acre addition to the Sugar Creek Healthy Rivers INitiative. The INitiative is the state's largest land conservation effort seeking to protect over 43,000 acres along the Wabash River and Sugar Creek, and over 26,000 acres along the Muscatatuck River bottomlands. Its mix of forested, open, and riparian lands provides opportunities for hunting, fishing, trapping, boating, canoeing, photography and hiking.

- A 178-acre land parcel that is part of the recently announced Bicentennial Legacy Conservation Area, a signature project of the Bicentennial Nature Trust created to preserve and protect important conservation and recreational areas in preparation for the 200th anniversary of statehood in 2016. The conservation area extends from the Cope Environmental Center in Centerville to the DNR-managed Brookville Reservoir and will operate as an alliance of public and private landowners sharing a multi-disciplined resource management approach. Outdoor opportunities will be available as the project develops, including bird watching, photography, hiking, and fishing. The Indiana Natural Resources Foundation (INRF) has been granted the funds and will administer their distribution.

NRF executive director Bourke Patton said, "We're pleased to work with the Indiana

Wildlife Federation and a long list of generous, conservation-minded organizations to acquire these critical natural resources with the help of I&M, and to make them available for all Hoosiers to enjoy."

The funds come from I&M under a legal settlement with the U.S. Environmental Protection Agency, eight states, and 13 citizen groups. The settlement included an agreement by I&M to invest \$2.5 million to improve air quality in Indiana. The monies are being overseen by a committee that includes Citizens Action Coalition, Hoosier Environmental Council, and Indiana Wildlife Federation, with the Sierra Club as a non-voting member and Environmental Law and Policy Center as a non-voting legal advisor and facilitator. 🌱

Conservation Alliance Expands Communication

By Jane Savage

INPAWS members have an opportunity to tap new resources regarding conservation legislation efforts this year, thanks to the expansion of communication methods by the Indiana Conservation Alliance (INCA).

INCA is a statewide network of over 25 non-profit environmental, wildlife, outdoors, and land preservation organizations. It provides a voice for the protection, stewardship, and sustainable use of Indiana's natural resources. INCA's goals are to foster and promote a greater environmental awareness in Indiana and advocate for conservation issues with the general public and state legislators.

Representatives from INPAWS and other INCA organizations meet annually in November to determine priorities for the coming legislative session. The Indiana General Assembly will be in session Jan. 13 to Mar. 14. In preparation, INCA is improving its communication system to keep Hoosiers better informed.

John Ulmer, member of the INCA steering committee says, "Indiana Conservation Alliance is revamping its communication

Peine Farm

methods. We will use new email (indianacon-servationalliance@gmail.com) and Twitter (@INConservation) and Facebook accounts and are constructing a Website (INConservation.org).

"There will be running updates on the Website in blog format of what's what at the Statehouse as far as INCA's priorities are concerned. The Website will also have 'how to' pages to help you find who your legislators are, how to contact them, and other pertinent information."

Lynn Dennis, director of government relations at The Nature Conservancy, Tim Maloney, senior policy director at the Hoosier Environmental Council, and Barbara Simpson, executive director of the Indiana Wildlife Federation, who are frequently at the Statehouse during the legislative session, will post Tweets about what is happening as it happens.

"Our goal," Ulmer says, "is to be the source of information regarding the Alliance's efforts in the legislature throughout the entire session, not just on Conservation Day at the Statehouse Jan. 28."

"Any member of INPAWS may be added to INCA's contact list for emails that INCA will send out with updates on bills, calls for action, committee hearings and other items that pertain to INCA priorities."

On Conservation Day, Jan. 28, INPAWS members are urged to join other conservation-minded Hoosiers in networking and lobbying legislators for the legislative priorities set by the Indiana Conservation Alliance. Individuals can coordinate a time to meet their legislators at the INCA reception. The Hoosier Environmental Council Website (hec-web.org) will have details.

Jane Savage is co-chair of conservation on the INPAWS board, a member of the board of the Brown County Native Woodlands Project, and a Boone County Master Gardener.

John Ulmer is a member of the INCA steering committee and chair of the Eagle Creek Watershed Alliance. He works with Hoosier Heartland Resource Conservation and Development Council.

By Sue Arnold

My Google Map lady was shouting "un navigable road" as I went deeper into Morgan County and onto smaller and smaller roads, headed for the Peine farm. On Sept. 21, Dee Ann and Rich Peine shared a beautiful day with a dozen of us at the 200-acre property that has been in Rich's family since 1969.

Hike



Katherine Newkirk

Where cows once grazed and gold miners ravaged the land, nature has restored a successional forest. Rich named the trees, many of them oak and beech, and Dee Ann and others pointed out native plants in the understory. We saw beautiful ladies' tresses (*Spiranthes ovalis*), endangered golden seal (*Hydrastis canadensis*), and the drupes of spicebush (*Lindera benzoin*).

The group split and Dee Ann led the more adventurous folks (with better boots) along a creek and into wet areas. The more open areas of the land were glorious in blooming Joe Pye weed, golden-rods and asters.

A bonus of the hike into the woods was standing on top of Jack's Butte, the highest point in Morgan County. After the hike, we enjoyed hospitality, cider, local apples, and conversation in the Peine cabin.

"Big Sue" Arnold, standing at right in the photo above, is a longtime birder and Master Gardener.

During a recent INPAWS outing, hikers wearing good boots and layered clothes, carrying field guides, cameras, and hand lenses, and accompanied by well-mannered canines were rewarded with an abundance of natural beauty at the Peine Farm in Morgan County.

Dateline Speedway

Quintuple Win for Natives

By Amy Perry

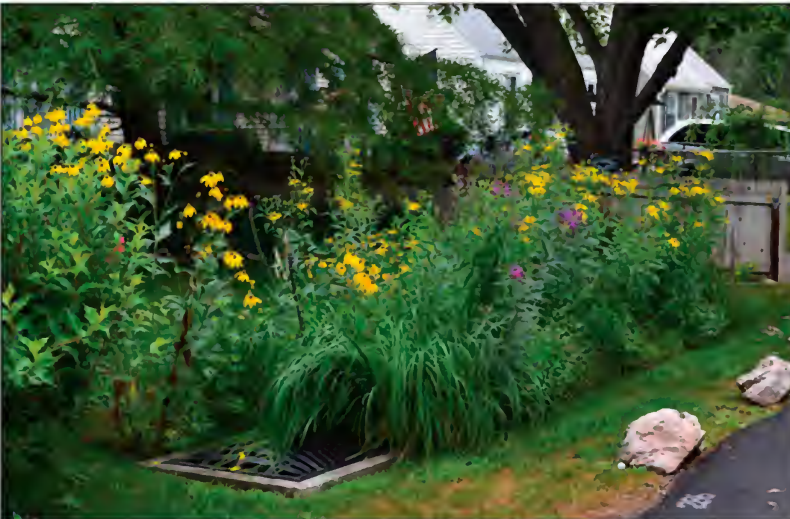
When nearly 19,000 native plants were installed at a Speedway school many people, as well as the INPAWS cause, benefitted.

- The town experienced a dramatic drop in the amount of raw sewage entering its streams after rainstorms.
- The town received two financial benefits.
- Residents and elementary students can enjoy the beauty of native plants.
- Residents and students were educated about the benefits of native species.

Plugs of recently installed native plants



Remenschneider Associates



In a bioswale in Speedway, water pools and infiltrates in the landscaped basin (right side), which is lower than the left side, where the overflow drain receives excess runoff. The resident exemplifies the power of outreach. He has taken ownership of the plants installed in the right-of-way in his yard.

Not only does he tend the plants, but he even painted the steel drain black so it will not rust.

- The landscape architects who planned the project won the INPAWS award at the annual luncheon of the Indiana Chapter of the American Society of Landscape Architects.

Remenschneider Associates, Inc., won the INPAWS award at the INASLA awards banquet September 20 at the Monon Center East in Carmel. INPAWS gives the award annually for the best use of native plants in a landscaping project.

The architects planned and oversaw the planting of native plants in a historic neighborhood near Carl G. Fisher Elementary School in the town of Speedway in a sewer separation project. The goal was to prevent raw sewage from entering local streams for 85 to 90 percent of annual storms by capturing and returning storm water to

local ground water supplies via infiltration basins and swales.

This reduction in storm water volumes decreased pollutant loads on local streams and dramatically reduced combined sewer overflows within the town's local streams – overflows went from 44 in 2011 to three in 2012. The project also reduced the size of storm water pipes required, thereby decreasing construction costs.

The town benefitted financially in that it received a one-half percent reduction in its State Revolving Loan rate for implementing green infrastructure. Monitoring has confirmed that all basins and swales are free of standing water in less than 72 hours after a two-inch rain. Infiltration rates will improve over time as native plant roots dig deeper into the soil.

Ken Remenschneider stated, "The use of nearly 19,000 native plants throughout the 1.5-acre project area is a truly public demonstration of a sustainable landscape aesthetic within a functional application. The project was installed at the beginning of the 2012 drought, which as the drought continued, was cause for plant loss concerns. The native plants, however, resolutely proved their mettle by flushing out with incredible growth and bloom in spring and early summer.

"Without question, the public education and outreach with local residents was necessary and critical for gaining the acceptance necessary to achieve our goals. The Town of Speedway has embraced native plant communities to achieve their storm water management goals, while gracing one of their neighborhoods with a seasonally evolving array of textures and colors animated by the foraging of birds and butterflies."

I had the pleasure of representing INPAWS at the INASLA awards luncheon, where I learned a lot about landscape architecture. Many landscape architects use the INPAWS Website to select plants appropriate to various conditions and purposes. When I introduced myself to my tablemates, they already were familiar with INPAWS.

The ASLA mission is almost synonymous with the INPAWS mission. Their Website states, "The mission of ASLA is to lead, to educate, and to

Win for Natives – continued on page 10

Deploying Beetles to Battle Invasives

**By Alexandra Wardwell
and Dona Bergman**

Is it possible to win the battle against invasive plant species? For several years, non-profit groups in Southern Indiana had seen the growing need to create a Cooperative Weed Management Area. Southern Indiana Cooperative Invasives Management (SICIM) was incorporated in 2008 and designated as non-profit in 2009. It is the oldest and largest CWMA in Indiana, covering 35 counties.

A Cooperative Weed Management Area (CWMA) is a coalition of private and public organizations in a given geographic area – landowners, private groups and government agencies who share knowledge, personnel and resources to educate the public and support invasive species prevention and eradication.

In 2013, SICIM, its partner organizations and volunteers participated in surveys of purple loosestrife (*Lythrum salicaria*) and hydrilla (*Hydrilla verticillata*) across Southern Indiana, spending 70.5 hours and covering an amazing 458.8 miles of roads, ditches, and water bodies.

The surveys were part of a grant working with the Ohio River Basin Fish Habitat Partnership, U.S. Fish and Wildlife Service, Hoosier and Wayne National Forests, Appalachian Ohio Weed Control Partnership and the River to River Cooperative Weed Management Area in southern Illinois.

The grant focused on hydrilla and purple loosestrife public outreach and education materials, mapping and control. Funding was provided by the U.S. Fish and Wildlife Service under the National Fish Habitat Action Plan.

Purple loosestrife was targeted because it is an aggressive invader in moist soil and wetland areas which can quickly dominate native vegetation and form dense colonies. It is a branching, erect perennial that can grow up to eight feet tall, but more typically four to five feet tall. It has a large, tough root crown which is difficult to pull. The showy magenta flowers are noticeable from July to September along roadsides and waterways. It is now illegal to buy, sell or move purple loosestrife and its cultivars in Indiana – even supposedly “sterile” plants can produce viable seeds.

SICIM and partner organizations have also been involved in a purple loosestrife biological control project over the last couple of years. Bio-control is a component of integrated pest management, defined by Cornell University as the reduction of pest populations by natural enemies. Typically, an active human role is required.

In May, 2013, about 15 people met at a boat landing at Yellowwood Lake in Yellowwood State Forest, where over 25,000 leaf-eating beetles (*Galerucella* sp.) had

been released as a bio-control for purple loosestrife during the last decade. With advice from Rich Dunbar, regional ecologist for DNR Nature Preserves, and Susan Knowles, private land biologist for U.S. Fish and Wildlife Service, the group collected over 1,000 of the leaf-eating purple loosestrife beetles from plants along the shoreline.

The beetles were transported in coolers (so they wouldn't overheat) to be released on Duke Energy property near the Ohio River and the I-65 median outside Seymour.

In the future, SICIM hopes to do further purple loosestrife beetle collections, releasing them at new sites where they are most needed. INPAWS members are encouraged to help SICIM next year with this and other invasives-related projects.

For information on how to help, contact Alex Wardwell at edrr@sicim.info or (812) 653-5563 or visit SICIM's Website at www.sicim.info. For information about the beetles, see www.entomology.wisc.edu/mbcn/kyf501 and www.biocontrol.entomology.cornell.edu/weedfeed/Galerucella.

Alexandra Wardwell is coordinator of Southern Indiana Cooperative Invasives Management (SICIM).

Dona Bergman is director of the Evansville Department of Sustainability, Energy and Environmental Quality and president of the Southwest Chapter of INPAWS.



Volunteers collected more than 1,000 beetles in Yellowwood State Forest and transported them to a site infested with purple loosestrife to chew the invaders.



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Garden Great

Sensational Switchgrass

By Sue Nord Peiffer

Saving for another time the debate over whether cultivars are truly native, I've opted to write about a fantastic switchgrass selection for Hoosier gardens. The species *Panicum virgatum* is an important component of the tall grass prairie and is easily grown in a garden setting.

The clone 'Northwind' was found as a seedling in Illinois by Wisconsin nurseryman Roy Diblik. The striking feature that set this plant apart from other switchgrasses is its upright growth habit. Other *Panicum* tend to be open and airy, often floppy in a garden setting. 'Northwind' is green with a tinge of blue during the growing season and turns straw-colored in the fall. The seed heads are attractive and held tightly in the center of the clump.

Though tidy and showy enough to use as a specimen in a sunny garden, this five-foot cultivar works well as a screen. It has been used to advantage at the back of a rain garden at the Indianapolis Museum of Art for several years. Additionally, professional growers have taken notice. The Perennial Plant Association has selected 'Northwind' as "2014 Perennial Plant of the Year" for its excellent performance over a wide range of the US, only the third grass to earn this distinction.

Sue Nord Peiffer is a horticulturist, manager of the Greenhouse at the Indianapolis Museum of Art and a charter member of INPAWS.



Sue Nord Peiffer